AUTOMOTIVE INDUSTRIES

PASSENGER CARS • TRUCKS • BUSES • AIRCRAFT • TRACTORS • ENGINES • BODIES • TRAILERS • ROAD MACHINERY • FARM MACHINERY
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ENGINEERING • PRODUCTION • MANAGEMENT

MID-CENTURY STATISTICAL ISSUE

MARCH 15, 1950

32nd Annual Issue . . . **A Comprehensive and Comparative Presentation of Important Statistics of the Automotive Industries**

Economic Data on Wages and Cost of Living

Fifty Years of Production and Registrations

Complete Specifications of 1950 Motor Vehicles, Tractors, and Aircraft

Specifications of Current Engines—Gasoline, Diesel, Outboard Motors, and Gas Turbines

Directory of Vehicle and Engine Manufacturers

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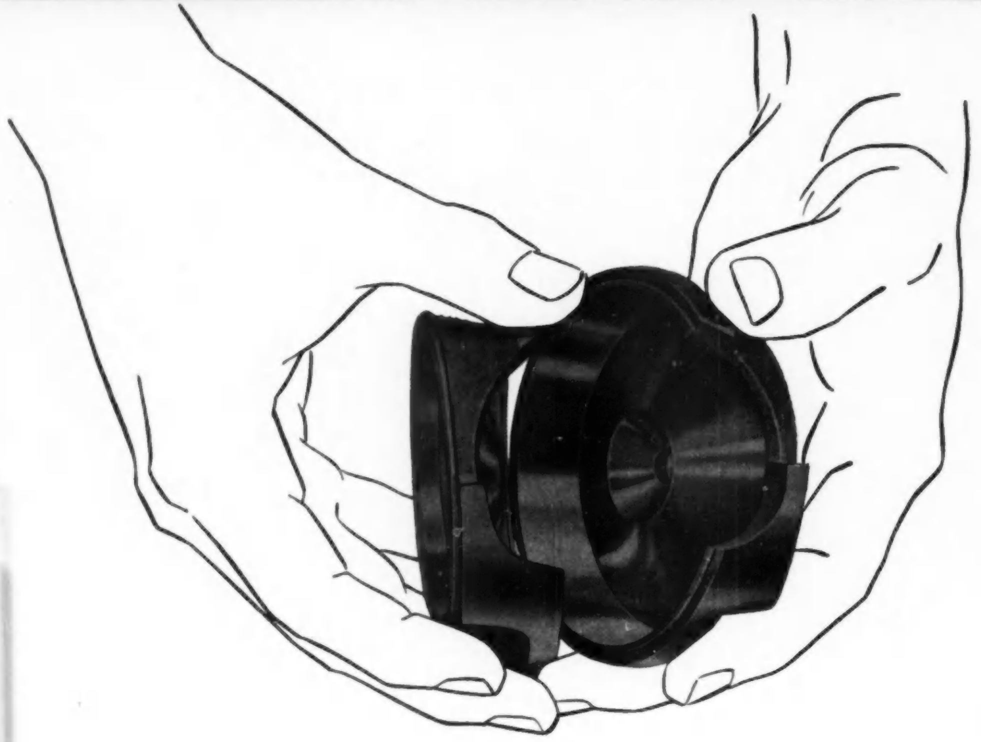
A CHILTON PUBLICATION



every pair a perfect match

...because these mating water meter parts are made for each other, at the same time, on the same Heald Bore-Matic

No more selective assembly. No more wasting of mis-fit parts. The water meter cones shown above are now precision borized — a pair at a time — on a new Heald Model 221 Bore-Matic. This high-speed, high-precision machine is tooled up to perform six different borizing operations on each cone — automatically, and without possibility of error. Result: All like parts are identical and interchangeable. And every pair snaps together with a perfect fit.

An hour saved today is worth more than ever before. And with competition back in the saddle again, it may mean the difference between producing at a profit — just breaking even — or taking a loss on the job.

Thats why it's so important to remember that more precision in precision finishing can help you save time and cut costs all along the line. Remember, too, that when it comes to precision finishing, it pays to come to Heald.

THE HEALD MACHINE COMPANY

HEALD

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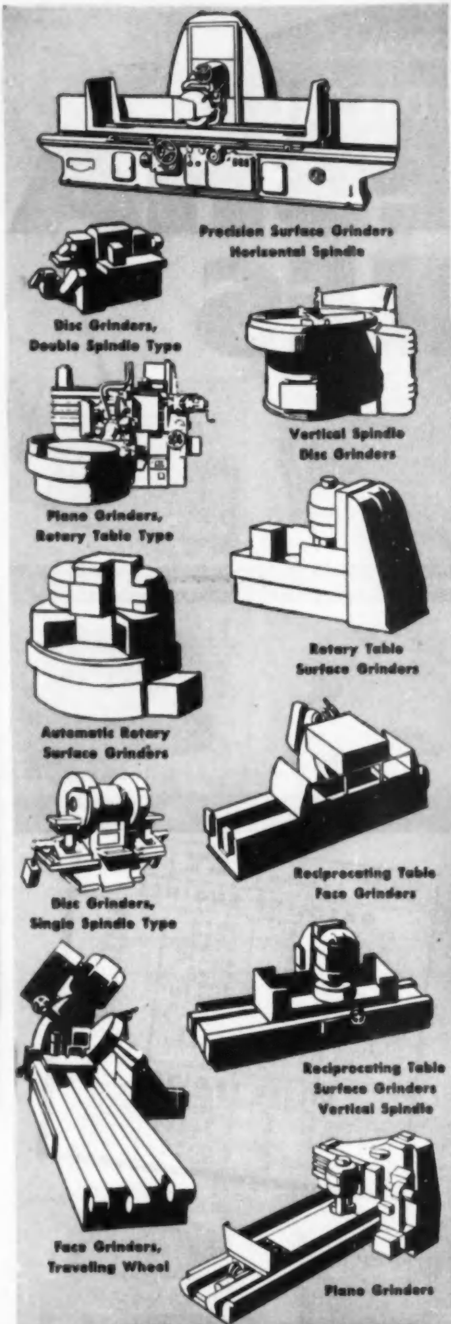
Branch Offices: Chicago • Cleveland • Dayton • Detroit • Indianapolis • Lansing • New York

MATTISON GRINDERS

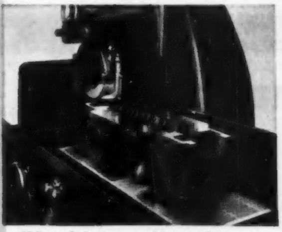


If its a Flat Surface to Grind
There's a Mattison to Grind it.

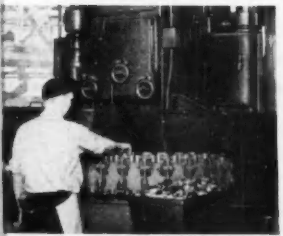
● With the addition of the production grinding machinery formerly made by the Hanchett Manufacturing Company, Mattison now is in a position to work with you on all your surface, face and disc grinding problems. These machines are made in various types to handle a wide range of work. Experienced fixture engineers are available to give you best production efficiency with Mattison Machines.

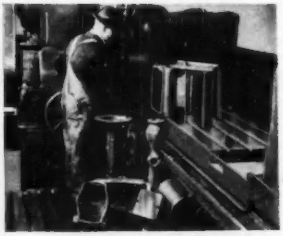
For any flat grinding, ask for our recommendations on the proper method and machine for your job. No obligation, of course.

For catalog on all machines, ask for free copy of general bulletin.


40 hours before — now 4 hours. Pump case ground on Mattison Horizontal Spindle Precision Surface Grinder


320 surfaces of cast iron compression heads per hour, removing 1/32" stock with Mattison No. 24 Rotary Surface Grinder


900 connecting rods per hour, using 40 station fixture to finish grind crank and wrist pin end of assembled rod with Mattison No. 72 Grinder


Shows variety of work run on Mattison Face Grinders

MATTISON MACHINE WORKS

ROCKFORD · ILLINOIS

AUTOMOTIVE INDUSTRIES

Published Semi-Monthly

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FOR AUTOMATIC TRANSMISSIONS
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PLANTS AT MUSKEGON AND SPARTA

BUNDYWELD TUBING....

arteries of AUTOMOTIVE SAFETY

Take 95% of today's cars.

Look beyond the sleek, smart styling, beyond the excellently engineered power plant. You'll find fuel lines, oil lines, hydraulic brake lines and push-button systems of dependable, double-walled Bundyweld—arteries of automotive safety.

Engineers know that Bundyweld is right for these really important applications, as it is on an average of 20 others per car, for *no other tubing can match all its automotive advantages.*

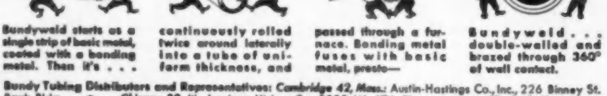
It's made by a patented process, double-walled from a single strip, copper-bonded at all points of wall contact—a rugged tubing that thrives on stress and strain. Bundyweld's leakproof, too. No worry about maintaining proper pressure with this sturdy tubing! Thinner, stronger walls, lightweight *and* ductile, make bends and connections an easy, safe, sure cinch.

Your product's performance pulse will be stronger, safer, better with Bundyweld Tubing. Safety comes first, and Bundyweld's *first* for safety. Check this miracle tubing for all your tubing needs. Contact a listed distributor, or write: ***Bundy Tubing Company, Detroit 14, Michigan.***

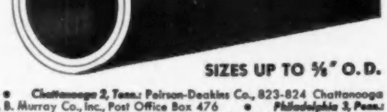
Bundyweld Tubing®

DOUBLE-WALLED FROM A SINGLE STRIP

WHY BUNDYWELD IS BETTER TUBING



Bundyweld starts as a single strip of basic metal, coated with a bonding metal. Then it's . . . continuously rolled twice around laterally into a tube of uniform thickness, and passed through a furnace. Bonding metal fuses with basic metal, presto— Bundyweld . . . double-walled and brazed through 360° of wall contact.



SIZES UP TO ⅝" O.D.

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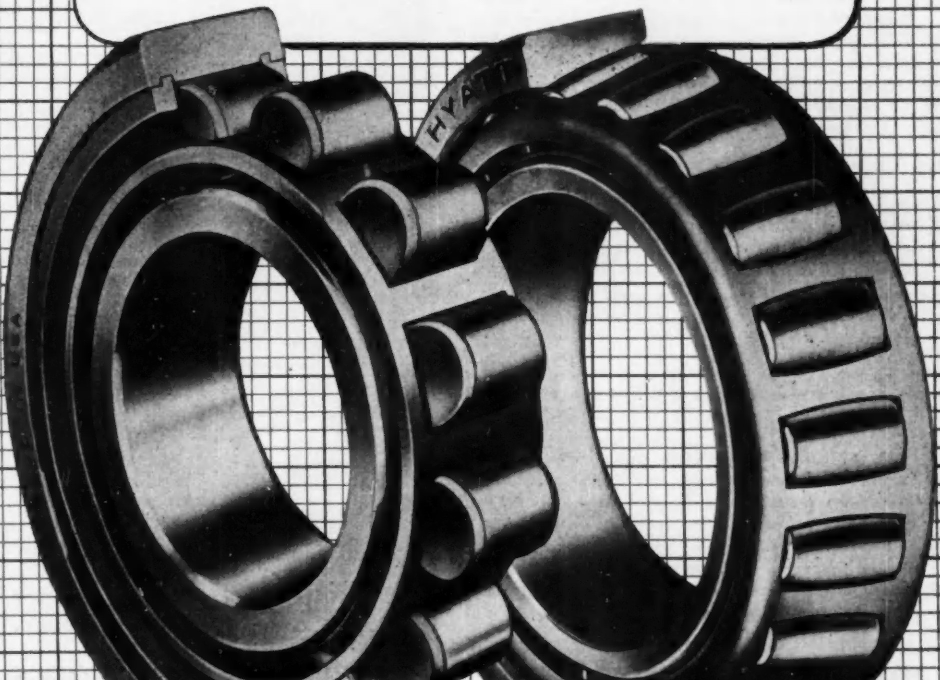
Designed to do a better job

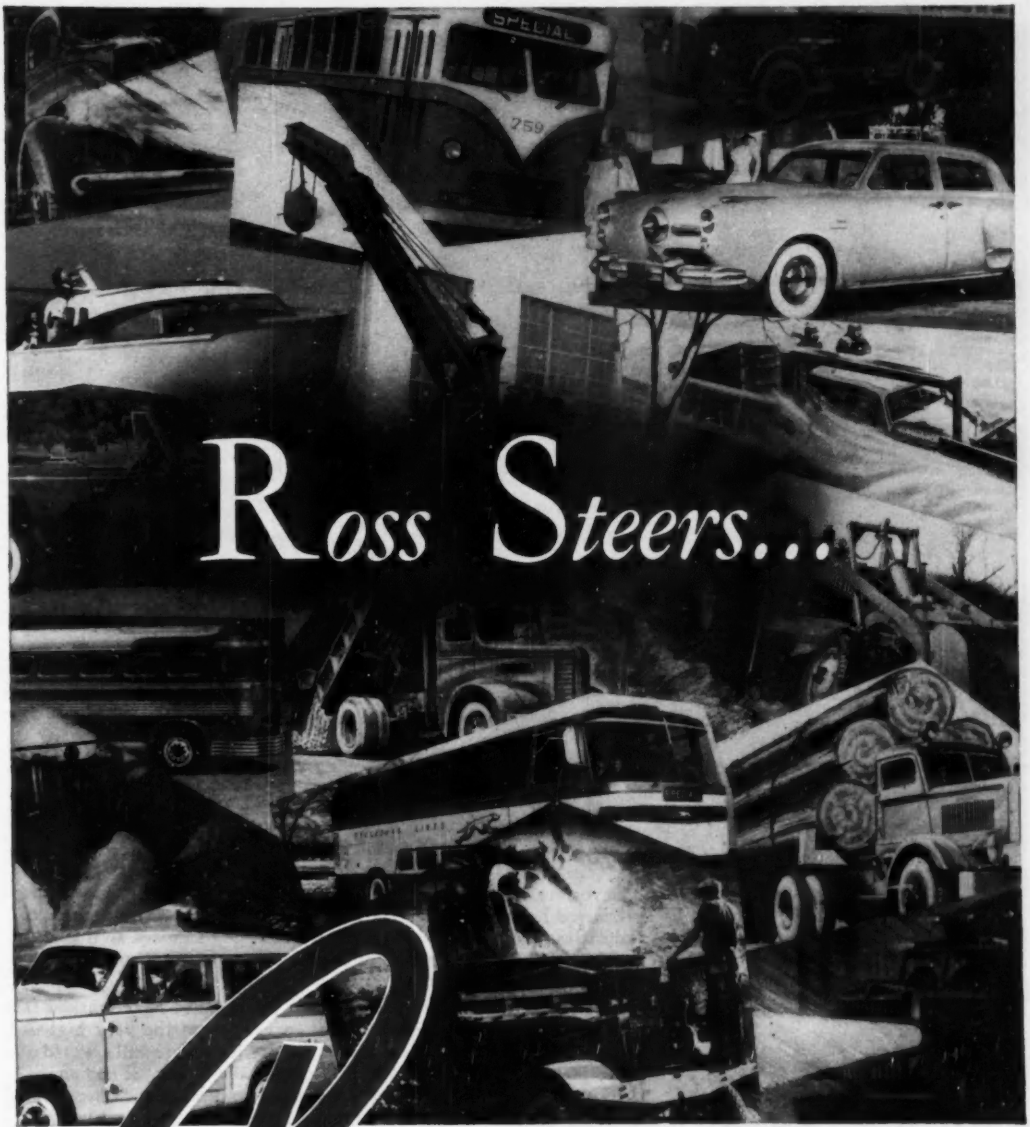
Aware that these bearings would do a better job than was required, engineers in the automotive industry have, for over half a century, designed in Hyatts.

Millions of Hyatt Roller Bearings of various types and sizes are used in transmissions, differentials, pinions, steering gears and wheels.

Year after year, subject to the most exacting laboratory tests and the gruelling grind of road mileage, the answer is always the same—Hyatts do a better job. Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey; Detroit, Michigan.



HYATT ROLLER BEARINGS


SPECIAL
759
Ross Steers...

Highest Qualifications

for

Meeting Rigid Demands

The remarkably wide range of uses to which components made and processed by Western Felt are astonishing. It is serving in scores of industries—from women's hats to 50 ton forge hammers. In the automobile field alone, as an example, this felt has been chosen to best serve in more than thirty purposes.

Western Felt engineers and chemists for decades have worked in close cooperation with users of felt to give them the very highest quality of material, exactness and uniformity. There are still a world of potential uses for Western Felt products, made to almost any shape, size or consistency. They range from wool softness to rock hardness. When cut, it does not fray or lose shape. It can be cut to close tolerances for such products as gaskets, washers, channels, grommets, filters, seals etc. It can be made waterproof and fungusproof and flame resistant. It will pay you to place your felt requirements in the experienced hands of Western Felt. Its counsel and products will prove profitable.

Acadia Synthetic Products Division, WESTERN FELT WORKS, Processors of Synthetic Rubbers —Sheets, Extrusions, Molded Parts.

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LARGEST INDEPENDENT MANUFACTURERS and CUTTERS of WOOL, HAIR and JUTE FELTS

FASTER GRINDING — FEWER WHEEL DRESSINGS — LOWER COSTS

Operation: Grinding spindles to remove .020″ stock
Metal: 4150 steel, hardened to 40-45 Rockwell
Machine: Cincinnati Filmatic, 10″ cylindrical grinder
Emulsion: Texaco Soluble Oil D at 58:1

Economies gained by a New England plant* using TEXACO SOLUBLE OIL

In this spindle grinding operation, an emulsion of *Texaco Soluble Oil D* is far out-performing the previously used high-priced competitive coolant. This is shown by a comparative run in which the same number of pieces was ground with each lubricant in turn.

Throughout the test, the wheel protected by the *Texaco Soluble Oil* emulsion required no dressing at all. Wheel size and corners were adequately maintained. With the competitive coolant, wear and corner breakdown sufficient to require wheel dressing occurred before half the run was completed.

In addition, *Texaco Soluble Oil* kept the wheel open, assuring faster cutting and better finish, and considerably reduced the total time for the run.

Examples like this of lower cost machining are the rule when *Texaco Cutting, Grinding and Soluble Oils* are on the job. A Texaco Lubrication Engineer will gladly help you gain these same benefits in your plant—whatever your metal working operations. Just call the nearest of the more than 2,000 Texaco Wholesale Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

**Name of this Texaco user on request*

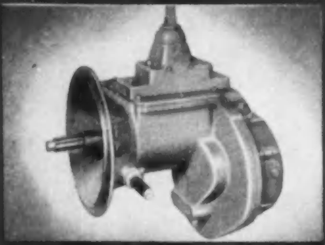
TEXACO

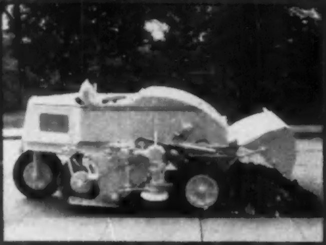
TEXACO CUTTING, GRINDING AND SOLUBLE OILS FOR FASTER MACHINING

TUNE IN . . . TEXACO presents MILTON BERLE on television every Tuesday night. METROPOLITAN OPERA radio broadcasts every Saturday afternoon.

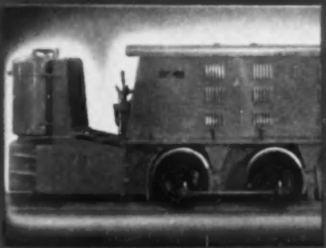
Engineered TO ORDER

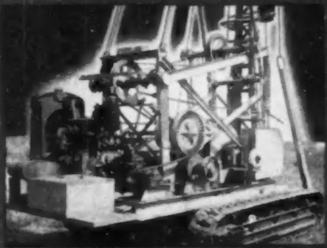
Heavy-duty loads . . . gruelling wear . . . continuous day-and-night operation . . . these are old stories to COTTA "Engineered-To-Order" Transmissions . . .





For over 30 years our engineering staff has taken in stride those so called "impossible" jobs . . . custom-designing power transmissions to fit available space.





. . . jobs that ordinary gear-boxes can't handle! If you can't get what you need in transmission performance from ordinary sources, come to COTTA!


FREE BROCHURE illustrating more than 20 installations of transmissions Engineered-To-Order by COTTA. Send for it today.

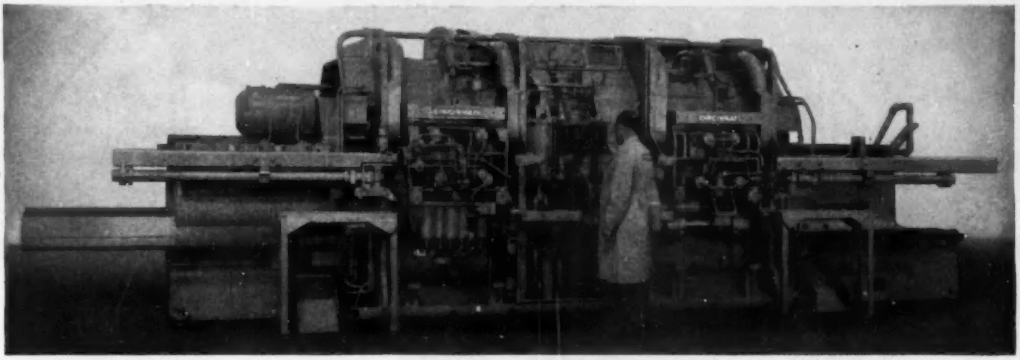
An Assurance of Dependable Service

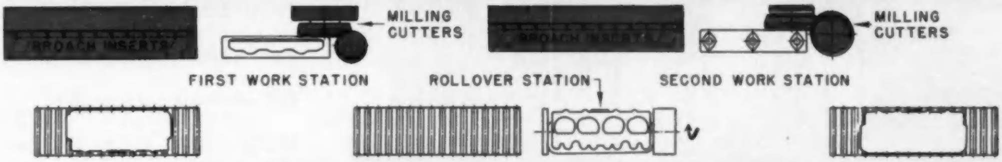
COTTA
HEAVY-DUTY TRANSMISSIONS

WRITE FOR FREE BROCHURE: COTTA TRANSMISSION CO., ROCKFORD, ILLINOIS

MILLING ~~VS~~ AND BROACHING

ON CINCINNATI MILL-BROACH MACHINES



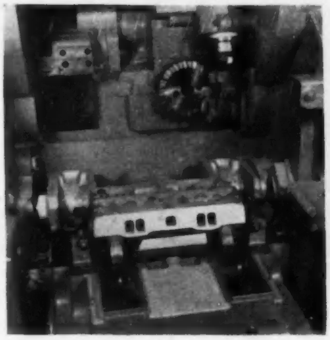


Production planners of parts like cylinder heads no longer need concern themselves with the knotty problem "Shall we broach or mill?" The advantages of both have been combined in one machine — CINCINNATI Mill-Broach — developed by Cincinnati Application Engineers.

In one continuous cycle, four sides of cylinder heads are rough milled and then finished by the broaching process. Cutters and broach inserts are carried on a ram, and the work is stationary while being machined. Two milling cutters at the first station mill the top and side of one casting. Simultaneously, two milling cutters at the second station mill the manifold and parting surfaces on a casting transferred from station No. 1. Upon completion of this part of the cycle the ram speed changes from a milling feed of 40 inches/min. to a broaching speed of 40 feet/min. Then the previously milled surfaces are broached to a high-quality finish and close accuracy of flatness. Conveyors aid the operator in loading and unloading the work.

Although developed primarily for cylinder heads, the Mill-Broach principle could be applied to other parts as well. Our engineers would like to go into details with you. Write to department E.S., outlining your problem.

Part name	Cylinder head
Material	Cast iron
Operation	Mill and broach four sides
Stock removal	3/16" to 1/4"
Milling	Speed—320 ft./min., max. Feed—40 in./min.
Broaching speed	40 ft./min.
Production	43/hour



Station No. 1, fixture swiveled down. Work has been milled and broached, ready to transfer to roll-over station.

CINCINNATI

REPLACE WITH A NEW CINCINNATI

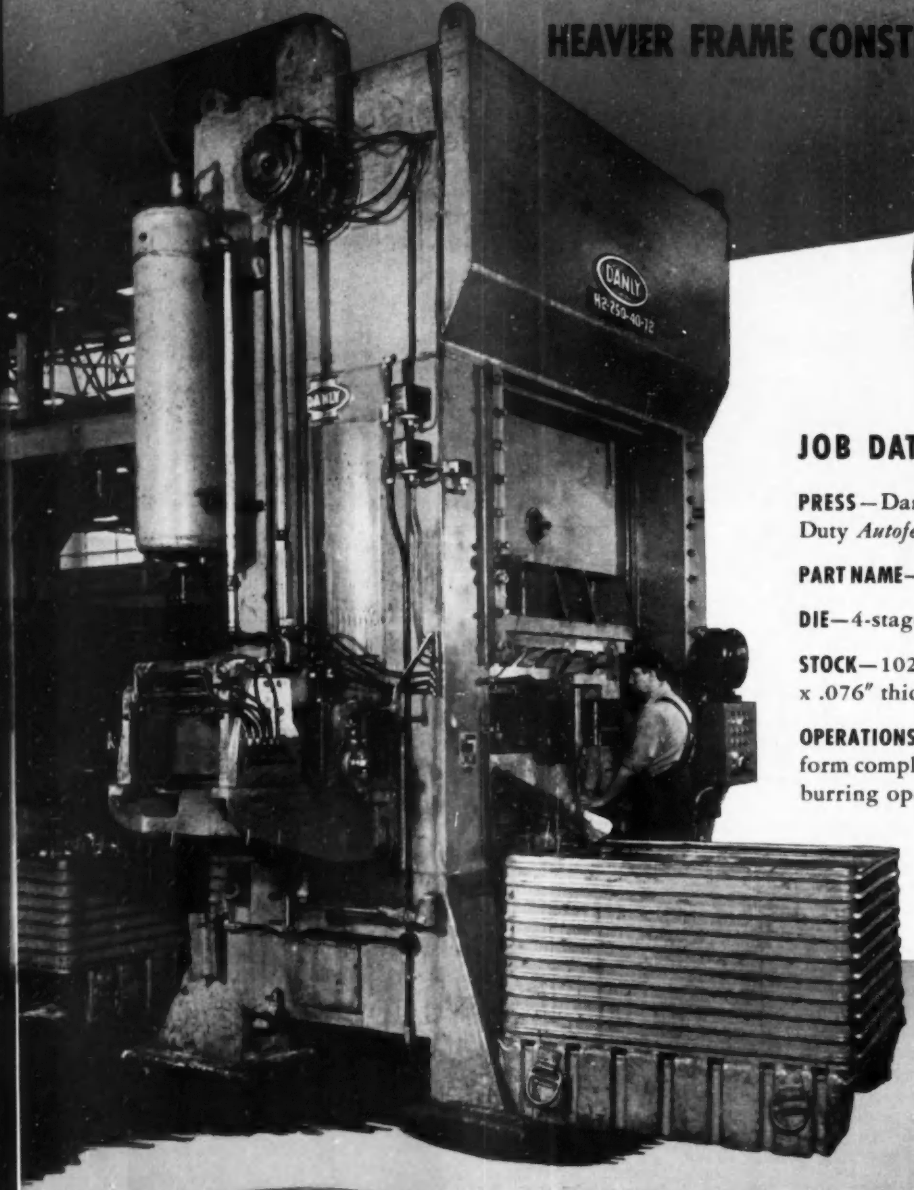
THE CINCINNATI MILLING MACHINE CO.

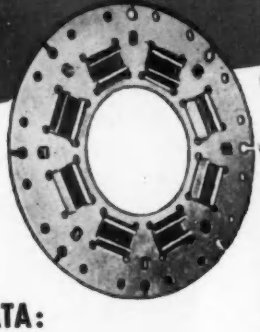
CINCINNATI 9, OHIO, U. S. A.

MILLING MACHINES • BROACHING MACHINES • CUTTER SHARPENING MACHINES
FLAME HARDENING MACHINES • OPTICAL PROJECTION PROFILE GRINDERS • CUTTING FLUID

FASTER SPEED OF *Autofeed* PRESS

HEAVIER FRAME CONSTRUCTION





JOB DATA:

PRESS—Danly 250-ton Heavy Duty *Autofeed*

PART NAME—Clutch driven plate

DIE—4-stage progressive

STOCK—1020 CRS, 6⅛" wide x .076" thick, coil..

OPERATIONS—Blank, pierce and form complete. (No subsequent burring operation required)

This Danly 250-ton Heavy Duty Autofeed press produces both finished stampings shown on the inspection table (opposite page). Formerly, each stamping was made on a separate press.

DANLY ®

DANLY MACHINE SPECIALTIES, INC.

2100 S. 52nd AVENUE, CHICAGO 50, ILLINOIS

MECHANICAL PRESSES

INCREASES PRODUCTION...TRIPLES DIE LIFE

REDUCES VIBRATION AND BED DEFLECTION

PERMITTING LONG RUNS AT HIGHER SPEED

THIS AUTOMOTIVE stamping was formerly produced on a press of the same tonnage at 20 strokes per minute. Now, on a Danly Heavy Duty *Autofeed* press, the speed has been tripled to 60 strokes per minute. In addition to increasing production, three times as many parts are produced between die grinds, and burring has been substantially reduced. Quality has been improved while reducing direct production costs.

All Heavy Duty *Autofeed* presses are designed throughout for faster, automatic stamping of parts. The entire frame is constructed heavier for the rated capacity of the press, reducing vibration at higher operating speeds. The result is longer uninterrupted runs, better die performance and higher product quality.

Production Increased—Heavier frame construction permits taking full advantage of automatic feed through progressive dies completing numerous operations in one press. Handling is reduced—one press does the work of several presses.

Maintenance Costs Reduced—The Danly air-cooled, air-operated clutch and brake operate for prolonged periods without maintenance. Friction discs responsible for clutching and braking action are not subjected to the disintegrating effects of high temperatures.

Automatic lubrication flushes all bearings in crown and slide, including gibs, substantially increasing the prime life and top performance of the press.

EXCLUSIVE DANLY FEATURES POINT TO LOWER STAMPING COSTS

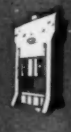
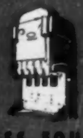
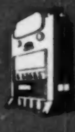
Die Tryouts Facilitated—Special Danly controls and unusual clutch sensitivity inherent in Danly design permit closer, more accurate "inching" during die tryouts. This saves time and adds safety in getting dies spotted and in production.

Inspection operation showing both clutch plates and lamp mounting brackets in place on gages. These parts are alternately produced on the Danly Autofeed Press.

WRITE FOR COMPLETE INFORMATION

Consult Danly Engineers for the most efficient presses to meet any requirement from 50 tons up. Danly Straight-Side, Single Action, Double Action and Gap Frame Presses are also setting production records throughout industry today.

Write now for catalog on Danly presses which can lead to real cost savings in your press shop.

OVER 25 YEARS OF DEPENDABLE SERVICE TO THE STAMPING INDUSTRY

AND PRESS EQUIPMENT

Geared to a world of

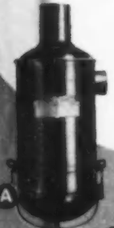
FOR almost 30 years United Specialties Company has served the fast-moving automotive industry—meeting the challenge of engineering advances with new products, improved designs and a research staff constantly alert to manufacturers' needs.

United offers over 260 models of oil bath air cleaners — a size and type to fit any kind of internal combustion engine, including diesel. Widespread use of these efficient air cleaners is reflected by our output to date of over 15 million units.

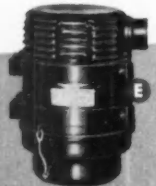
United's Mitchell Division provides a positive aid to driving safety with the Mitchell semi-automatic turn signal switch. Mitchell pioneered in the development of this unit which is rapidly becoming standard as more and more states adopt turn signal laws.

. . . Another Mitchell product, the durable, trouble-free Mitchell ignition switch, has long been original equipment on popular makes of cars and trucks . . . With products manufactured in our rolled shape department we are privileged to serve America's greatest industries — automobile, aviation, railroad, radio, television, pre-fabricated housing and many others.

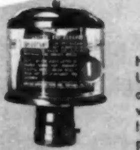
As the joint efforts of science and industry bring forth new products and improved models of those already in use, it is the responsibility of the specialty supplier to keep in step with such developments. We of United Specialties Company have always recognized this responsibility — progress is a standard upon which our continued growth depends.



Gasoline engines used on tractors, combines and other agricultural implements are protected by this standard type United Oil Bath Air Cleaner.



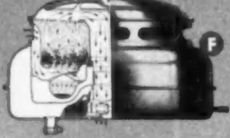
Heavy duty truck oil bath cleaner. Distinctive features are great dirt-trapping capacity with extremely high cleaning efficiency, large oil reservoir and ease of servicing.



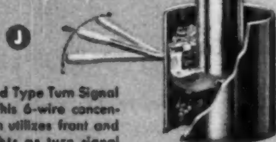
Here is another new United development—a chaff pre-cleaner with fitting that is easily attached to your present air cleaner installation. This chaff pre-cleaner is adaptable for all wheel tractors, graders, industrial power units and agricultural equipment. The chaff pre-cleaner removes a large percentage of chaff, dust and linty materials from the air before it enters the filter unit of the oil bath air cleaner. The chaff pre-cleaner has an outside plastic shell and the dirt pickup is visible at all times to the operator.

Here is a new United Oil Bath Air Cleaner that fills an important need in thu after market for vehicles not originally equipped with oil bath air cleaners. Designed with a special fitting this unit fits practically every car and truck.

Mitchell clamp-on and screw type semi-automatic turn signal switch used in cars, trucks, buses.

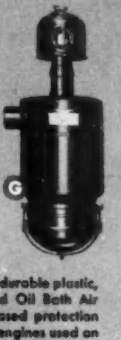


Combination oil bath cleaner and silencer designed for use on down draft carburetors where head room is not available for conventional type combination cleaner and silencer.



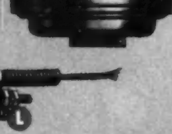
Concealed Type Turn Signal Switch. This 6-wire concentric switch utilizes front and rear lights as turn signal indicators as well as parking and stop lights. No additional lights are required — bulbs or sockets only are changed. Signal is self-cancelling.

Metal rolled shapes produced in Philadelphia plant: complete range of metals, designs, gauges, stainless steel, aluminum, brass, bronze, copper, — cold rolled, drawn and pressed for automobiles, airplanes, architectural requirements, railroad cars, radios, television receivers, all industrial uses.

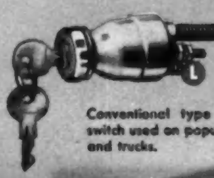


This United Oil Bath Air Cleaner is designed especially to protect diesel engines in truck, tractor, grader and industrial power units, where wide range of engine speed occurs.

New! Made of tough, durable plastic, this transparent United Oil Bath Air Cleaner affords increased protection against dust for small engines used on garden tractors, power lawn mowers, motor scooters, etc. Cleaning action is visible to user at all times.

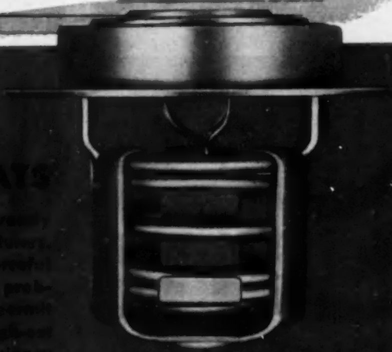


Popular style of oil bath air cleaner used on trucks where cleaner is mounted directly on air horn of down draft carburetor.



Conventional type Mitchell ignition switch used on popular makes of cars and trucks.

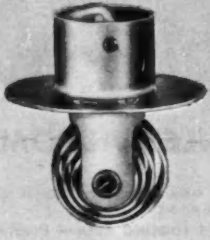
DOLE *invites any test you may want to make of* *Thermostat Performance*



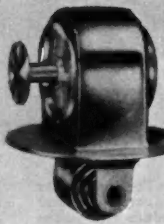
DV THERMOSTATS

Great improvement in thermostat design! Already accepted by leading car and truck manufacturers. Coil spring action controlled by [illegible] forceful thermostatic element. Specifically meets the problems of modern cooling system design to permit smaller radiators, higher pump pressures, high-[illegible] pressure caps — all with increased pump efficiency and freedom from [illegible].

Also a complete line of standard types in all sizes as shown by representative numbers below:



No. B-65—Typical Dole Bi-Metal Thermostat operated by large coil; for motor-block installations



No. P-16 — The poppet type Dole Thermostat with bi-metal element for motor block

No. B-F — The bi-metal element in hose-line models with butterfly valve

No. P—The poppet principle in a line of Dole Thermostats for hose-line applications

THE DOLE VALVE COMPANY

1901-1941 Carroll Avenue, Chicago 12, Illinois

Detroit · Los Angeles · Philadelphia

CONTROL WITH DOLE

From A SIMPLE SWITCH

To AN AUTOMATIC BRAIN

SYNCHRO-START CONTROLS
FIT EVERY ENGINE REQUIREMENT

The control panel pictured above is that used for FIRE PROTECTION at many large manufacturing plants — air fields — hospitals — theatres — department stores — office buildings and which is accepted by Insurance Companies as wholly dependable protection.

Engines controlled by SYNCHRO-START have opened many new fields providing huge savings for the users of engine power as the main source, or as stand-by in case of emergency.

For the past eighteen years, SYNCHRO-START CONTROLS have been constantly rendering dependable service and protecting lives and property all over the world — on the seas, in the air, on land and in the mines.

The duty and functions of SYNCHRO-START CONTROLS are:

1. To automatically START an engine at a predetermined TIME or a CONDITION when power is needed, no matter what the application may be.
2. To automatically STOP that engine when its power is no longer needed and to have it ready for the next POWER DEMAND.
3. To automatically PROTECT that engine, its accessories and the *equipment* it is driving, against any abnormal condition that may cause *damage* while it is running. Also to indicate the cause of any trouble should it occur.
4. To afford valuable SAVINGS by having a DEPENDABLE source of power always available.

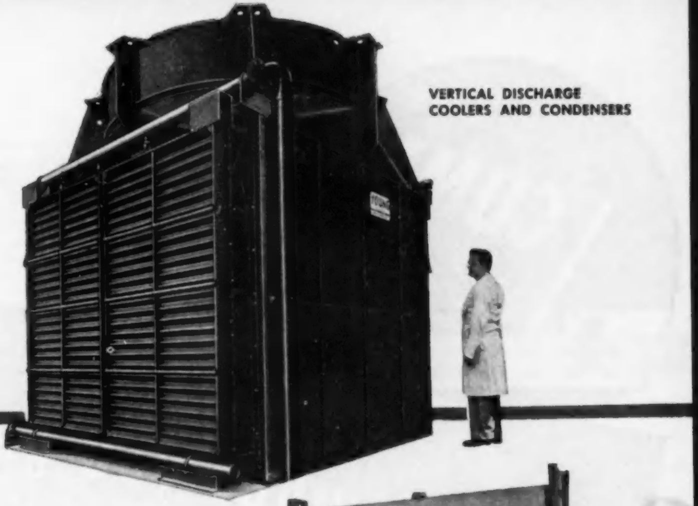
If you are not familiar with the SAFETY and the ECONOMY provided by SYNCHRO-START CONTROLLED ENGINES, ask your engine manufacturer — engine dealer — engineering firm, architect, or write to us for free information and our nearest representative.

SYNCHRO-START PRODUCTS, INC.
1046 WEST FULLERTON AVENUE • CHICAGO 14, ILLINOIS

OVERSPEED GOVERNORS • SOLENOIDS • TIME ELEMENTS • RELAYS • SWITCHES • SAFETY CONTROLS • RECORDING CONTROLS • PRE-SET AUTOMATIC OR MANUAL CONTROL SYSTEMS FOR INTERNAL COMBUSTION ENGINES

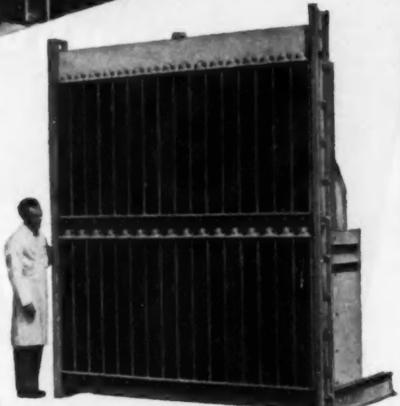
Young Quality

T. M. Reg. U. S. Pat. Off.



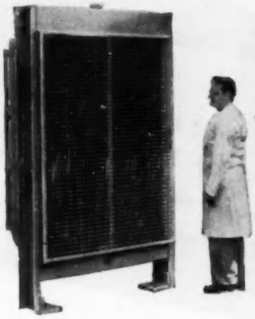
VERTICAL DISCHARGE COOLERS AND CONDENSERS

mum of cost. Young Engineers take great pride in their ability to design specialized equipment for performing a combination of services. Such versatility makes available a single source for your heat transfer needs . . . assures products that are engineered to work perfectly together. Catalog 148, available upon request, illustrates the broad range of the Young line.

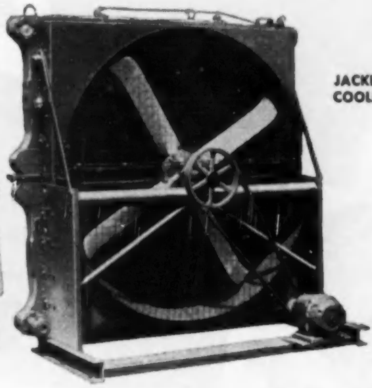


SECTIONAL STEEL RADIATORS

LOCOMOTIVE RADIATORS



WELDED STEEL RADIATORS



JACKET WATER COOLERS

GENERAL OFFICES • DEPARTMENT [illegible] • RACINE, WISCONSIN
PLANTS AT RACINE, WISCONSIN AND MATTOON, ILLINOIS

May we EXPLODE an old theory on machining?

We refer to the idea that no water-soluble oil should be used as the cutting fluid in automatic screw machines. A few years ago we might have agreed with that—but not now! There is *one*—and one only—which we would now recommend for automatics. That is ANTISEP All-Purpose Base. Solutions of that modern concentrate are being used all over industry in automatics, because it is proving more than satisfactory from every angle—cooling ability, safety, finish and speed.

The reason is that Antisep A.P. Base isn't just another water-soluble cutting oil. It has established an entirely new concept in machining. Here is a base oil with high fatty content, anti-welding characteristics, high film strength and excellent lubricating qualities. It may be used for 90% of all machining jobs, and it costs, in solution, less than 7 cents a gallon!

May we cite you authentic instances of where and how Antisep Base is out-performing former types of cutting fluids in automatics? We believe you'll then agree that we've busted an old tradition wide open. E. F. Houghton & Co., 303 W. Lehigh Avenue, Phila. 33, Pa.

Read what

ANTISEP A.P. BASE

is doing for others:

In 40 days a wheel manufacturer saved $341.60 on oil alone, with better tool life, no rust, no bearing wear, no parts too hot to handle.

•

Surface speeds up to 340 FPM were attained on an automatic machining large bearing races of 52100 steel. "Only oil having sufficient lubricating qualities," says the manufacturer.

•

Cost of machining air hose coupler reduced from 46¢ to less than 10¢ per gal. for Antisep solution. Work is cooler and cleaner.

•

A collet maker estimates Antisep Base on one automatic saved him $350 last year.

•

Tool life on forming tools has increased 100%, says a clamp maker. Production upped 15% since switching to Antisep Base.

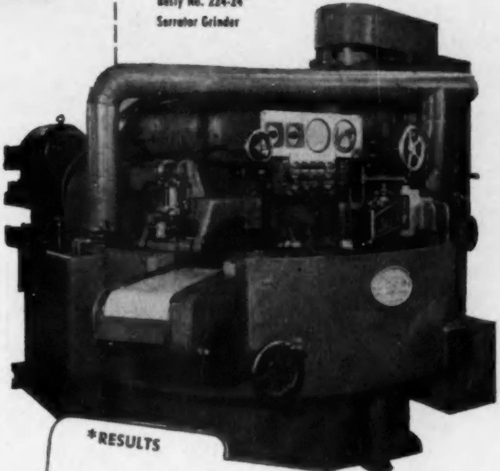
HOUGHTON

PRODUCTS FOR METAL WORKING

CUTTING OILS • QUENCHING OILS • HEAT TREATING SALTS • METAL CLEANERS
RUST PREVENTIVES • INHIBITORS • "FORTIFIED" LUBRICANTS • PACKINGS

New BESLY Grinder...

Besly No. 224-24" Serrator Grinder



...turns out 15,000 serrated ledger plates per 8-hr. shift!

*RESULTS

. . . 15,000 serrated ledger plates every 8 hrs.
Hardened plates are bevelled and serrated in one operation at the rate of 32 per minute in this new automatic-feed Besly No. 224-24" Serrator Grinder. Finished sections are serrated at the same rate. Besides much faster production, these results have been realized: greater uniformity—less noise—fewer rejects—less time loss for wheel dressing. Change-over time for various size units is reduced to *seconds!*

RESULTS like these are your pay-off for choosing BESLY

*RESULTS

. . . 329 gear cases per hour—tolerance .005"
Gear cases are 18" in diameter x 6¼" thick. Stock removed, 1/32" thick. Both faster production rates and closer tolerances are achieved. This new Besly No. 372 Vertical Spindle Roto-Rotary Wet Grinder has 72" abrasive wheel and 4 spindles. Each working station holds 2 castings.

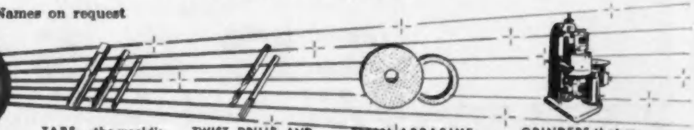
*RESULTS

. . . 2400 wrenches per hour—300% increase
Quality markedly improved—all four surfaces accurately ground—ends free from taper. This Besly Double-Spindle Wet Grinder has magnetic vibrator and automatic chain feed. Only one pass through grinder is necessary.

Call in the man with the grinder facts—the Besly engineer. Let him tell you—frankly—whether Besly can cut *your* grinding costs. Also, he may be able to show you operations where a change-over from another process to grinding can substantially reduce production costs. Such a survey costs *you* nothing—but it may mark the beginning of lower costs . . . better, more accurately finished parts . . . increased output . . . or all three of these for you . . . just as it has for scores of other companies. Write us today!

*Names on request

BESLY



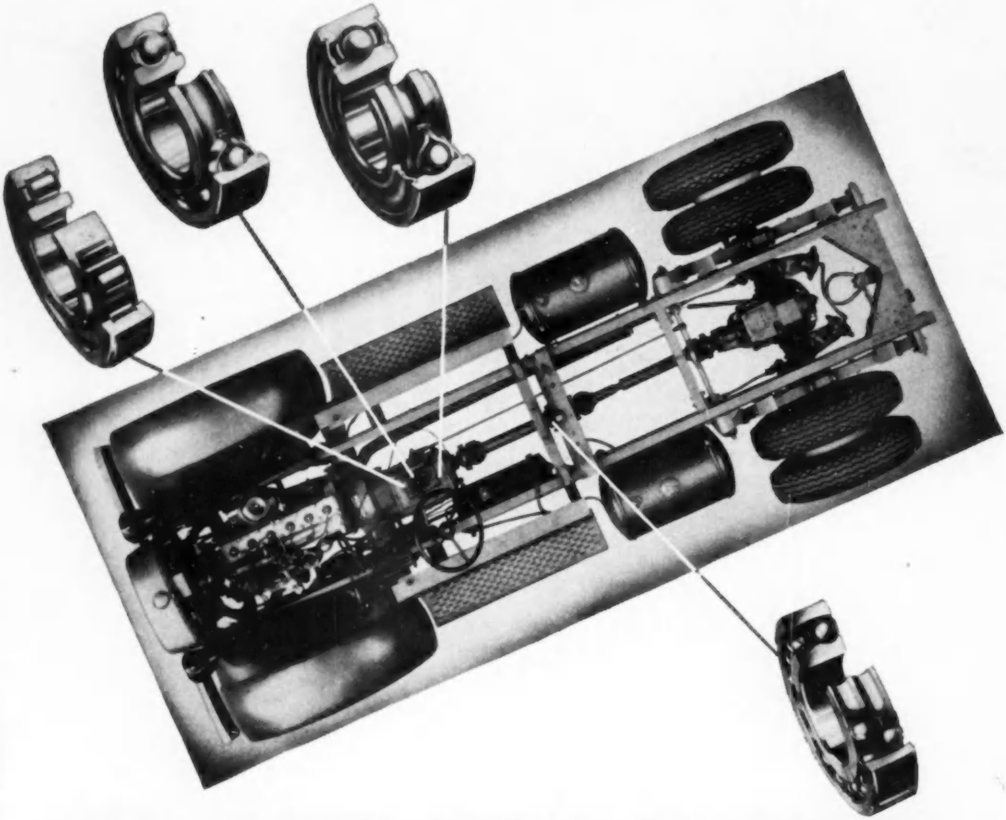
TAPS—the world's most accurate tap.

TWIST DRILLS AND REAMERS—Complete line for every need.

TITAN ABRASIVE WHEELS AND DISCS—individually formulated for your job.

GRINDERS that reduce costs on every type of surface grinding.

CHARLES H. BESLY & COMPANY • 118 N. Clinton Street, Chicago 6, Illinois • Factory: Beloit, Wisconsin



Studying Over Springs?

CALL US EARLY ENOUGH
WHEN JOB IS IN DEVELOPMENT STAGE
THEN WE CAN REALLY HELP!

IN many publications you will find detailed data on practically every metallic material, process and part widely used in manufacturing—except springs.

On springs you find little or no data. Because ordinarily springs are not a standard product.

Requirements of the job determine the exact spring material to be used, nature of bends and shapes, tolerance, finish, etc. Each high grade mechanical spring is or should be a separate engineering job.

There is perhaps no mechanical part that costs so little yet plays so vital a part in the operating efficiency of a product. Nor any vital part about which so little is known by the majority of the people who must buy it.

The professional engineer may know the basic principles of spring design but needs the specialized experience and facilities of the practical spring maker to put those theories into use.

While the average spring is made from one of half a dozen commonly used spring materials, there is no limit to the variations that can be worked out to meet unusual requirements. When changing, however, from carbon steel to alloys, slight changes in the dimensions of the spring must be made.

Heat treating, finishing, end grinding, inspection controls and other variables also materially affect both the performance and cost of your springs.

Consequently, selection of your source for mechanical springs is a matter of importance. On their spring engineering skill and production "know how" may depend the performance of your product and the good name of your company.

Here at Illinois Coil Spring Co. we are proud of the number of important manufacturers who have come to depend on us for their springs. Some after varied experiences with other sources.

This preferment has been earned, we believe, by our policy of first getting all the facts from customer or prospect—then developing *the* spring that can be produced most economically that will do the job dependably—then producing the springs strictly to specifications.

For certain types of spring items usually purchased in volume we often can develop special production equipment that enables us to show the buyer important savings.

In this and other phases of the spring business we find we can serve our customers best when we can maintain direct contact with them to exchange information.

So we are inviting inquiries principally from manufacturers in the Middle West. For them we are in a position to do an *especially* good job.

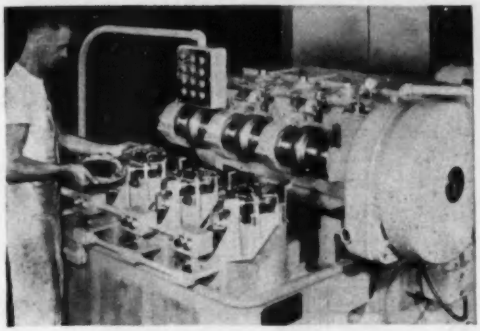
May We Work With You?

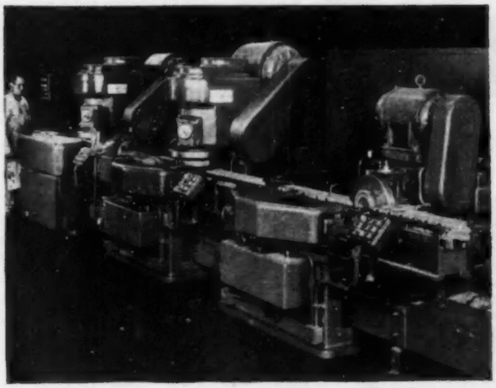
ILLINOIS COIL SPRING COMPANY

2100 NORTH MAJOR AVENUE — TELEPHONE BErkshire 7-6464 — CHICAGO 39, ILLINOIS

3 Station Transfer Type Rigidmil Mills Top, Bottom and Both Sides of Cylinder Head

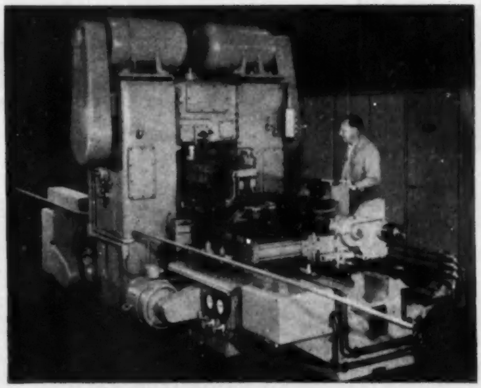
This Sundstrand Special Rigidmil mills the top, contact face, manifold pad and accessory pad side of a cylinder head in one automatic handling. Part is shuttled into fixture of first unit and is automatically positioned and clamped. A 25 HP traveling head with one horizontal and one vertical spindle mills top and accessory pad side. The clamps release, and the part is shuttled into the second unit, a fixture which turns the part over. The part then enters fixture of third unit. Another 40 HP traveling head, with vertical spindle, mills the contact face. At the end of this operation, clamping pressure releases, and the part moves into the fixture of fourth unit. A 15 HP traveling head with horizontal spindle mills the manifold pad. When finished, part is shuttled to unloading station and onto conveyor.





Special Rigidmil Mills Over 250 Clutch Plates Per Hour

This special Sundstrand Rigidmil mills the top and both sides of three lugs on various sizes of clutch plates at a rate of one completed part per machine cycle. The machine operates in an automatic cycle started by pushbutton. It has three sets of cutters mounted on an arbor opposite three work-holding stations, each with a three position automatic index fixture. At the end of each cycle of the head, the work part at one station is automatically unclamped, manually unloaded and loaded, and automatically clamped. One part is completed with each cycle, and production obtained is approximately 250 pieces per hour.

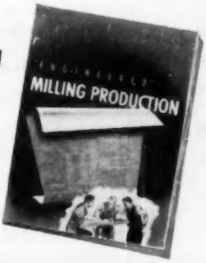


6 Spindle Rigidmil with Automatic Loading, Clamping, Milling and Unloading Cycle Mills 4 surfaces on Cylinder Block

This Sundstrand Special Rigidmil has a 6-spindle bridge type head, through which automotive cylinder blocks are fed to rough mill the top, rough and finish mill pan rail, mill pump pad and valve tappet cover pad. One horizontal spindle at rear mills top of cylinder block. The 3 horizontal spindles in front rough and finish mill pan rail while two vertical spindles mill the fuel pump and valve tappet cover pad. Machine has incoming and outgoing conveyor with automatic loading, clamping and unclamping and unloading. Operator's only duties are to start and stop machine cycle, as the machine has a full automatic cycle. The single horizontal spindle and two vertical spindles are driven by a 50 HP motor. The remaining 3 horizontal spindles are driven by one 40 HP motor. TC tipped cutters are used on all spindles.

FREE Additional Data

Write for more proof of the successful application of Sundstrand "Engineered" milling production. This 40 page book contains over 35 actual problem solutions together with interesting tooling diagrams. Write for your copy today. Ask for Bulletin No. 293.



SUNDSTRAND MACHINE TOOL CO. ROCKFORD, ILLINOIS, U.S.A.

SUNDSTRAND
MACHINE TOOL COMPANY

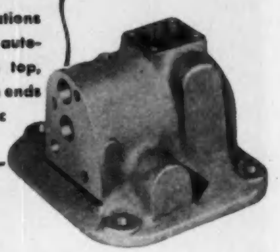
2571 Eleventh St. • Rockford, Ill., U.S.A.

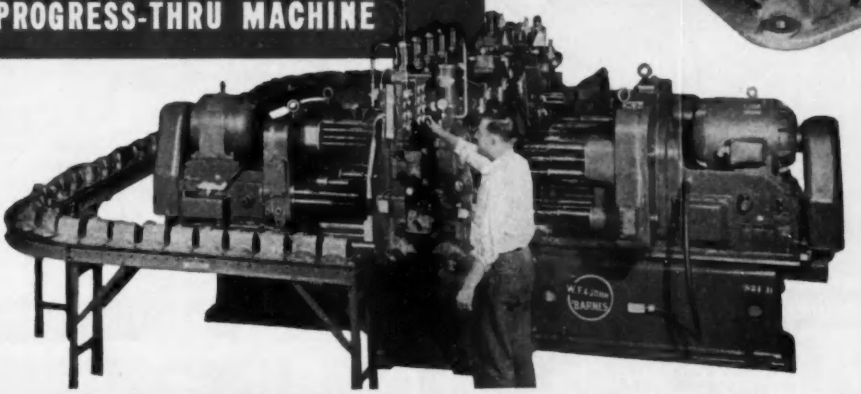
DRILLING AND CENTERING MACHINES • SPECIAL MILLING AND TURNING MACHINES

85 MACHINING OPERATIONS IN 60 SECONDS

Completed Automatically on... BARNES 11-STATION PROGRESS-THRU MACHINE

Machining operations are performed automatically in the top, bottom, and both ends of this Hydraulic Valve Body.





SEQUENCE OF AUTOMATIC CYCLE

Station Number	LEFT-HAND HEADS		RIGHT-HAND HEADS	
	Upper Deck Top Operations	Lower Deck Left-end Operations	Upper Deck Bottom Operations	Lower Deck Right-end Operations
1	Load	Reload	Load	Reload
2	Idle	Comb. drill (2) .827 drill (1) 9/16".	Drill (2) 33/64"; comb. drill & ream (2) 33/64"; for locating. Drill (2) .405" & .608 C'bore (1) 1/2" x 1/16" deep in bottom.	Comb. drill (2) 1/2" to depth & rough ream for .827". Drill (1) 9/16".
3	Comb. drill & chamfer (2) for 1/4"-20 tap; drill (1) for 1/8" pipe tap.	Comb. bore 8 C'bore (1) for .827 & 1.115".	Core drill (2) 1.120". C'bore (2) .608".	Drill (2) 1/2". Core drill (1) .9905 x 1/2" deep. Comb. drill (1) for 3/8"-16 tap.
4	Comb. drill & chamfer (4) for 1/4"-20 tap; drill (1) for 1/8" pipe tap in top.	Comb. finish bore & C'bore (1) .827" & 1.115".	Drill (1) 3/8" and (2) 11/32" x 11/16" deep. Bore (2) 1.120".	Drill (1) 1/4" Comb. drill (4) for 3/8"-16 tap.
5	Idle	Comb. drill & chamfer (4) for 3/8"-16 tap.	Comb. drill & chamfer (8) for 3/8"-16 tap.	Comb. finish bore & C'bore (2) for .827" & 1.115" dia.
6	Idle	Idle	Ream (2) .3760"; ream (1) .405 & (1) .608.	Semi-bore (2) .9905".
*7	Idle	Idle	Idle	Idle
*8	Idle	Idle	Idle	Idle
*9	Idle	Idle	Idle	Idle
10	Tap (6) 1/4"-20. Tap (2) 1/8" pipe.	Tap (4) 3/8"-16.	Tap (8) 3/8"-16.	Tap (4) 3/8"-16.
11	Unload for return.	Unload	Unload for return	Unload
TOTAL	16	15	34	20

Production: 60 pieces per hour at 100% efficiency.

*Idle stations between drilling and tapping units to facilitate changing of tools.

How Substantial Savings Are Effected in Machining Hydraulic Valve Bodies

This Progress-Thru Machine, designed and built by Barnes to cut costs of machining hydraulic valve bodies for a Tractor Manufacturer, completes a total of 85 different machining operations in 60 seconds. The parts are fed through the machine twice—first in a side position through a top deck, and second in an upright position through a lower deck. Precise machining results are obtained through use of retractable taper plug and dowel pin locators which assure accurate positioning and clamping of the work piece.

Floor Space Conserved, Work Handling Reduced

As illustrated, the valve bodies are returned to the operator on the gravity conveyor for the second loading. The efficient double-deck design of the machine permits grouping drilling, reaming, boring, and clamping operations in two, opposed, straddle-station, hydraulic heads. Tapping operations are handled by two, opposed, lead-screw heads. By combining operations in one machine, floor space is conserved while work handling and machinery costs are substantially reduced.

Ask For An Analysis of Your Machining Methods

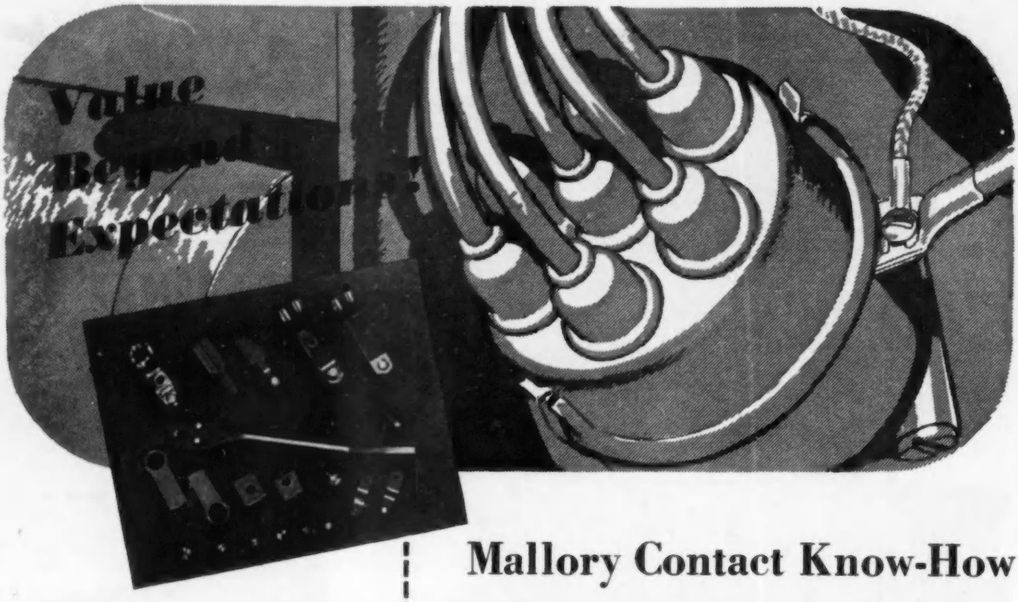
Find out how these and other Barnes designed machines may be applied to cut costs in your shop. Ask for an analysis of your methods. There is no obligation.

W. F. & JOHN BARNES

W. F. and JOHN BARNES

312 SOUTH WATER STREET • ROCKFORD, ILLINOIS, U.S.A.

FOR TODAY'S ALL-IMPORTANT NEED:
Productivity with Economy
P&J TOOLING ON AUTOMATICS
3U Speed-Flex
Newest P&J development—a small high speed machine for machining castings and forgings up to 6" diameter, 4" long — spindle speeds up to 1445 R.P.M.
4D Automatics
Made in two sizes (standard and elevated) with spindle speeds up to 696 R.P.M.—suitable for machining castings and forgings up to approximately 10 inch diameter.
5D Power-Flex
Built in three sizes (standard, elevated and elevated with long travel). Suitable for work up to about 14" diameter with spindle speeds up to 610 R.P.M.
5D-2 Power-Flex
Two spindle machines built in three sizes capable of high production machining of work up to 7", 10" and 13" diameters respectively.
6D Automatics
Available in three sizes and combinations of swings, travels and bed lengths . . . suitable for machining castings and forgings up to 18" diameter and 20" long.
6-DS Automatics
Heavy duty powerful machines (two sizes) for large castings and forgings . . . headstock capable of handling 60 H.P. swings over cross slide 21" (6-DS) and 27" (6-DSE) 13" turret feed.
8-DT Automatics
Equipped with special heavy duty cross slide . . . 60 H.P. headstock . . . swing over cross slide 23" . . . turret feed 16" . . . for large castings and forgings.
Potter & Johnston Company
Pawtucket, R. I.
subsidiary of Pratt & Whitney
Division Niles-Bement-Pond Company
P&J AUTOMATIC TURRET LATHES



Mallory Contact Know-How
Drives Customers' Costs to Rock-Bottom Level!

MALLORY TUNGSTEN CONTACTS

Although all Mallory tungsten is chemically the same, the size, shape and distribution of the grain particles are carefully controlled, since these factors vitally affect its electrical and mechanical properties. Mallory will gladly work with you to find the right contacts to meet your specifications. Write today.

Big savings for customers are the order of the day . . . and more and more of these savings are resulting from Mallory contact recommendations.

In the case of a manufacturer of ignition distributors, Mallory began making a whole contact assembly, slashing the cost of one important component alone by 50%! In addition, Mallory refined certain production techniques for an additional large saving.

That's value beyond expectations!

Mallory contact know-how is at your disposal. What Mallory has done for others can be done for you!

In Canada, made and sold by Johnson Matthey & Mallory, Ltd., 110 Industry St., Toronto 15, Ontario

Electrical Contacts and Contact Assemblies

P. R. MALLORY & CO. Inc.

MALLORY

P. R. MALLORY & CO., Inc., INDIANAPOLIS 6, INDIANA

SERVING INDUSTRY WITH

- Capacitors
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- Rectifiers
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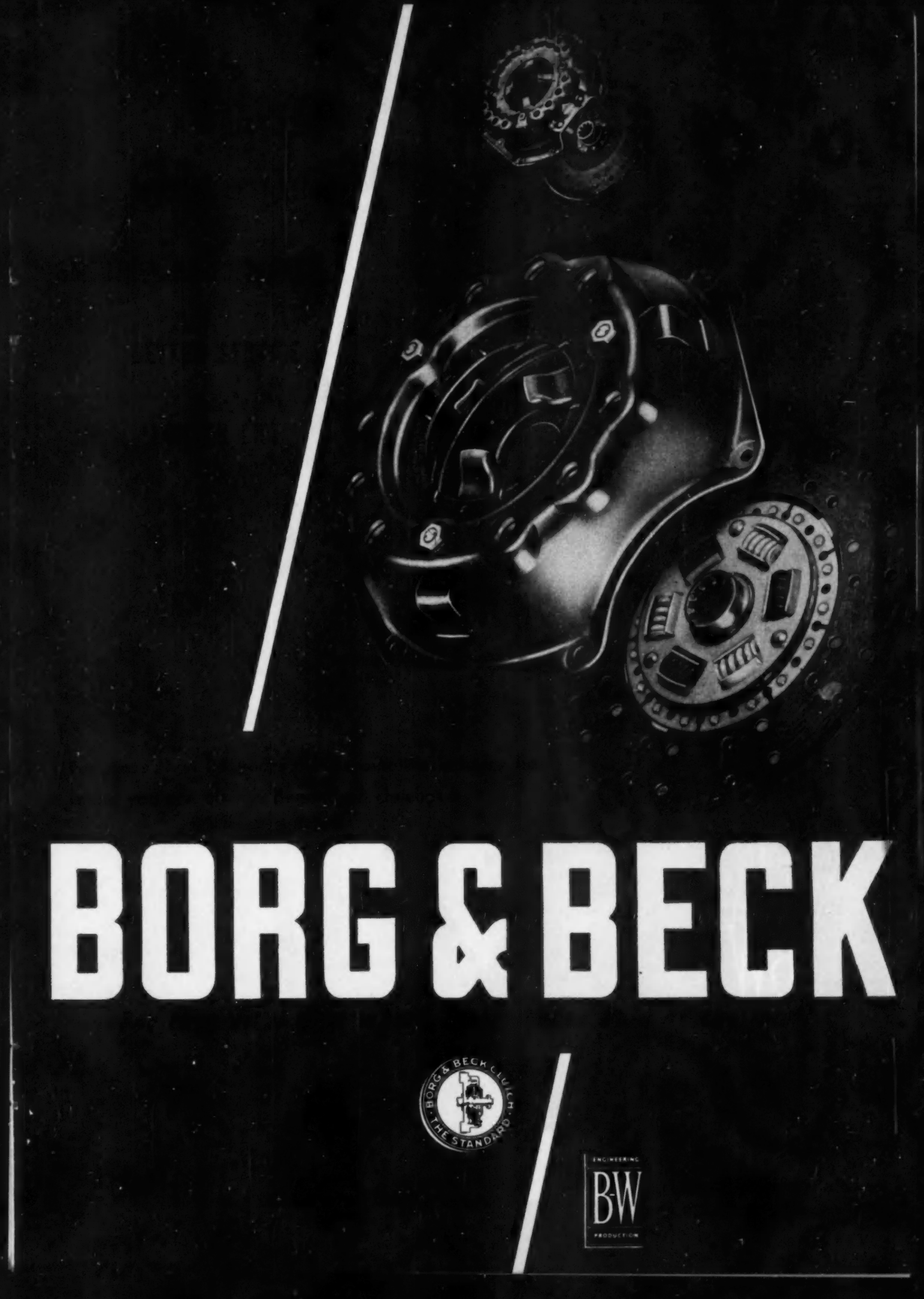
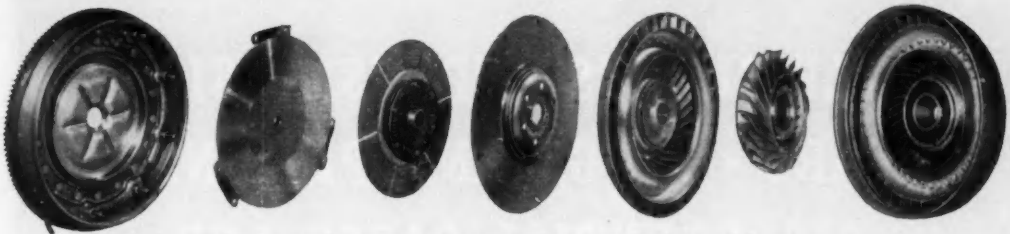
- Contacts
- Resistors
- Vibrators
- Power Supplies
- Resistance Welding Materials


BORG & BECK
BORG & BECK CLUTCH
THE STANDARD
ENGINEERING
B-W
PRODUCTION



THE LONG TORQUE CONVERTER

We have perfected a new torque converter for the automotive manufacturer.

A highly efficient unit, it has been designed for velvet-smooth power transfer with torque multiplication of better than 2 to 1 at stall.

Converter is direct air-cooled for simplicity and trouble-free service.

The various units of the assembly are fabricated from stampings, with a minimum of copper-brazing, for low-cost manufacture.

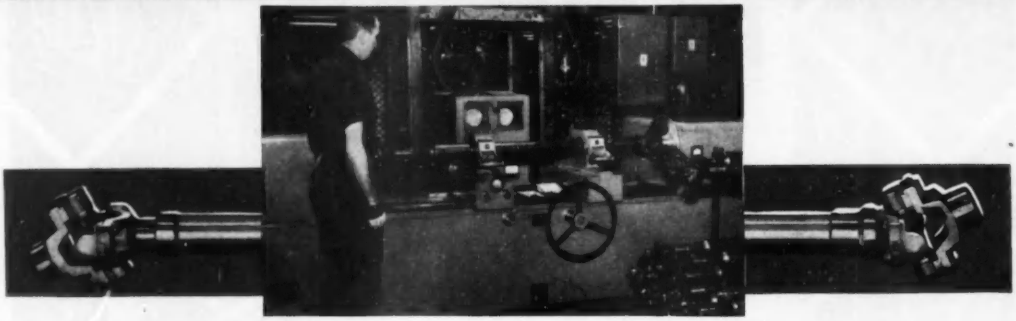
LONG

ENGINEERING BW PRODUCTION

LONG MANUFACTURING DIVISION
BORG-WARNER CORPORATION
Detroit 12 and Windsor, Ontario

TORQUE CONVERTERS • CLUTCHES • RADIATORS • OIL COOLERS

You CAN Transmit Power BETTER-with
ROCKFORD CLUTCHES
Millions of cars, trucks, tractors, industrial and farm machines are operating even more efficiently than was anticipated in setting up the original specifications — by using ROCKFORD CLUTCHES that are exactly engineered and suited for their particular needs. A ROCKFORD engineered-for-the-job application may be the means of improving the operation of your product. Certainly it will pay you to investigate the possibility. During the past quarter century, ROCKFORD has accumulated a fund of useful information about the transmission and control of power — through clutches. This know-how is available for the use of your engineering department. Write for a specific recommendation or a descriptive bulletin.
ENGINEERING
B-W
PRODUCTION
ROCKFORD
CLUTCHES
POWER TAKE-OFFS
ROCKFORD CLUTCH DIVISION BORG-WARNER
▲ 315 Catherine Street, Rockford, Illinois, U. S. A. ▲



Every high speed MECHANICS Roller Bearing UNIVERSAL JOINT and Truck PROPELLER SHAFT is carefully B-A-L-A-N-C-E-D to reduce runout, whip and vibration to a minimum. Brake flanges and fitting yokes are statically balanced or accurately machined all over. Complete truck shafts are dynamically balanced, at high speeds, and factory tested to insure smooth operation. The scientific design of MECHANICS Roller Bearing UNIVERSAL JOINTS eliminates all useless, unbalanced weight. The original alignment and balance are not disturbed when replacing MECHANICS cross-and-bearing assemblies, because the bearings and pilots are accurately ground to insure absolute centering and perfect fit. Let our engineers show you how these MECHANICS advantages will benefit your product.

MECHANICS UNIVERSAL JOINT DIVISION

Borg-Warner • 2024 Harrison Avenue, Rockford, Illinois

(Advertisement)

COPPER ALLOY BULLETIN

REPORTING NEWS AND TECHNICAL DEVELOPMENTS OF COPPER AND COPPER-BASE ALLOYS

Prepared Each Month by BRIDGEPORT BRASS COMPANY "Bridgeport" *Headquarters for BRASS, BRONZE and COPPER*

Methods of Machining Free-Cutting Brass Rod

Free-cutting brass rod is most commonly used for the manufacture of screw machine items. Bridgeport's Ledrite, containing 61% copper, 3.4% lead and the remainder zinc, has a machinability rating of 100. Other copper-base alloys are compared to free cutting brass rod for machinability rating.

Lead decreases ductility, thereby causing the chip to break up rapidly with a sharp reduction in heat-producing friction. These characteristics permit higher speeds and the use of a lighter cutting compound which produces greater cooling.

Cutting Tools

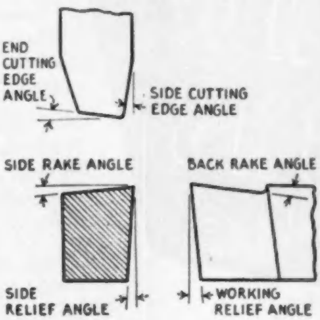
Despite the greater speeds and longer life possible with tungsten carbide tools, high-speed tools give such satisfactory service on this alloy that they are used widely in screw machine plants. Intricate forming tools are thereby produced at lower original cost. This is helpful on short runs.

Speeds and Feeds

Normal turning speeds with high-speed tools for free-cutting rod are between 300-700 surface feet per minute with a roughing feed in the neighborhood of 0.006" to 0.020". With carbide cutters, speeds up to 1000 fpm are attained with feeds of 0.005-0.025".

The low ductility of the metal permits minimum rake and clearance angles on the tool which gives greater support to the cutting edge.

TURNING TOOL NOMENCLATURE



High speeds are also possible in drilling and tapping, which means that there is no necessity for reducing speeds for these operations, with the subsequent loss in output.

Drills normally are flattened on the cutting edge to prevent hogging in by reducing the rake to zero. The rake angles on taps should also be held to a minimum.

DRILLING DATA

Clearance Angle	*Drill Point Angle*	*Cutting Edge*	*Speed Feet Per Min.*
12°-15°	118°	Flatten to 0° Rake	200-500

REAMING DATA

Back Rake	*Clearance*	*Land*	*Speed*
0°	6°-8°	5°-10°	100-200

TAPPING DATA

Rake	*Chamfer*	*Coolant*
2°-4°	10°-15° Two or Three Threads	Soluble Oil, Light Mineral Oil

Coolant-Lubricant

For a coolant-lubricant either a light mineral oil or soluble oil in the ratio of 25 parts water to 1 of oil is satisfactory. At high speeds, however, it is important that the stream or streams of cutting compounds do not splash off work and tools. Normally the outlets are fish-tailed to spread the coolant and also reduce the pressure at the nozzle.

Where considerable threading or tapping is involved, low mineral oils are generally used although the soluble oil solution can be enriched by reducing the proportions of water to oil.

Cold-Working Operations

Cold swaging or other cold working operations cannot be carried out to any great degree on this highly-leaded material. For this reason Ledrite 2 has been developed. There is 63% copper, 1.8% lead and the remainder zinc in this alloy. Operations such as roll threading, knurling, forming and expanding can be carried out on this alloy yet the machinability rating is high.

Bridgeport rod has many other fine features—accurate gauge, fine surface, uniformly excellent quality. When a special problem presents itself, consult our Laboratory.

TURNING DATA

	Tool Grinding				Speeds and Feeds for Turning			Coolant
70-100 Machinability	*Relief Angles Degrees Side*	*Relief Angles Degrees Working*	*Rake Angles Degrees Back*	*Rake Angles Degrees Side*	*Surface Speed Ft. per Min.*	*Roughing Feed*	*Finishing Feed*	
HS Steel Tool	0-5	6	0	0-3	300-700	0.006-0.020	0.003-0.015	Light Mineral or Soluble Oil
Carbide Tipped Tool	4-6	4-6	0	2-6	500-1000	0.015-0.025	0.005-0.015	

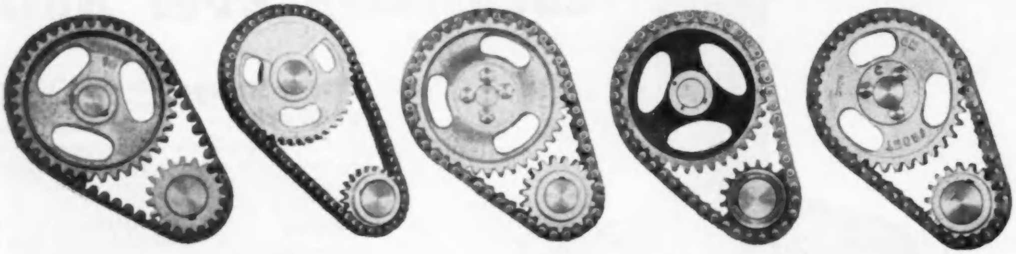
BRASS · BRONZE · COPPER · DURONZE — STRIP · ROD · WIRE · TUBING

MILLS IN
BRIDGEPORT, CONNECTICUT
INDIANAPOLIS, INDIANA
In Canada:
Noranda Copper and Brass Limited, Montreal

BRIDGEPORT BRASS COMPANY
BRIDGEPORT 2, CONNECTICUT
Established 1865
"Bridgeport" *District Offices and Warehouses in Principal Cities*

"Call the Roll"--and You'll Find 3 out of 4 Choose Chain!

• **LINK-BELT AUTOMOTIVE TIMING CHAINS** *used on Leading Automobile and Truck Engines*



LINK-BELT AUTOMOTIVE CHAINS

Meet Industry's Most Exacting Requirements

To the obvious natural advantages of chain for timing and other drives, Link-Belt engineering has added further advanced features contributing materially to the convenience, economy and long life efficiency of Link-Belt automotive chains.

GREATER STRENGTH—LESS SPACE

Link-Belt Chains possess greater strength and precision, resulting in a saving of valuable space, in addition to prolonging the life of the drive.

WEAR DEFYING JOINT

A distinctive feature of Link-Belt automotive timing chain is the split bushing and pin joint, which assures high efficiency and long life.

LONG LIFE

Service records show unusually long life for Link-Belt timing chains.

NEW BOOK EXPLAINS FEATURES

In addition to detailed description of Link-Belt automotive chains, Book 2065 contains a wealth of valuable engineering data, useful to every engineer in calculating timing and other auxiliary drives. We'll gladly send you a copy on request.

LINK-BELT COMPANY

220 S. Belmont Ave., Indianapolis 6, Ind. 5938 Linsdale Ave., Detroit 4, Mich.
Offices in Principal Cities

LINK-BELT
Chain Drives

Largest Manufacturer of Chains for Power Transmission

First choice

*S*ince 1916, the great majority of power farm machinery manufacturers have chosen Donaldson Air Cleaners as standard equipment.

This preference *must* be based on performance, which we believe is two-fold. First it is performance from the standpoint of engine protection by Donaldson Air Cleaners in the field. Secondly, it is the service provided by the Donaldson research, engineering and production departments.

This kind of performance has made the Donaldson Company the world's largest manufacturer of heavy-duty air cleaners. The experience and knowledge we have gained in solving dust protection problems for leading manufacturers of heavy-duty equipment will assist you in choosing the right air cleaner for your product. Write our engineering department.

These leading manufacturers use Donaldson Air Cleaners . . .

TRACTORS

Allis Chalmers
Caterpillar
Cockshutt
Co-op
Ferguson
John Deere
Fate-Root-Heath
Intercontinental
International Harvester
Massey-Harris
Minneapolis-Moline
Oliver

TRUCKS

Autocar
Diamond T
Euclid
Federal
Four Wheel Drive
International Harvester
Kenworth
Mack
Oshkosh
Sterling
White
Willys

DONALDSON
Oil-Washed
AIR CLEANERS

DONALDSON CO., INC.
666 PELHAM BLVD., ST. PAUL 4, MINN.
DONALDSON CO. (CANADA) LTD. CHATHAM, ONTARIO


Hanson's Supreme, bred and owned by J. A. Hanson, Corvallis, Oregon
Just another chicken?
This hen holds the world record for egg production by a leghorn—349 eggs in the 357-day official test. Her record, like the production record of a Clearing press, was not accidental, but resulted from long selective breeding toward a definite purpose.
Despite outward appearance, a Clearing is never "just another press". The factors that increase production are found in Clearing design and construction as a result of long selective development and study directed toward that definite purpose.
There's a lot more to press output than "strokes per minute." We'll be happy to explain—and prove—at your request.
CLEARING PRESSES
THE WAY TO EFFICIENT MASS PRODUCTION
CMC CLEARING
CLEARING MACHINE CORPORATION
6499 WEST 65TH STREET · CHICAGO 38, ILLINOIS

AUTOMOTIVE INDUSTRIES

March 15, 1950 Volume 102, No. 6

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1950 Statistical Issue

AUTOMOTIVE INDUSTRIES

Reg. U. S. Pat. Off.

News of the AUTOMOTIVE INDUSTRIES

Vol. 102, No. 6 March 15, 1950

Chrysler 1949 Sales and Net Set New Records

Chrysler Corp.'s 1949 sales and earnings set new all-time records. Net sales for 1949 amounted to $2,084,602,547 as compared with $1,567,933,360 for 1948, and net earnings in 1949 were $132,170,096 as against $89,187,240 for the preceding year. Chrysler unit sales for 1949 also established a new all-time record. United States plants sold 1,267,470 Plymouth, Dodge, DeSoto and Chrysler passenger cars and Dodge trucks. In addition 63,468 Canadian-built cars and trucks were sold during the year.

K-F Starts Production of 1951 Models

Kaiser-Frazer started production of its first 1951 models March 1st, two weeks ahead of schedule on the Frazer line. Production of the new Kaiser will begin shortly and the third car in the K-F line, the lower priced 100-in. wheelbase car, will start in June. Kaiser-Frazer stole the show at the Chicago Automobile Show in February with its completely new Kaiser model and its lower-priced car.

Nash Starts Production At Canadian Plant

Nash is now producing a new Canadian model at its Toronto assembly plant. The car is powered by an L-head engine with 184 cu in. piston displacement which develops 85 hp at 3800 rpm, and the taxable horsepower is 23.44.

It is equipped with torque tube drive with modifications to permit the use of radius rods with the coil springing at the rear. The car will be called the Canadian Airflyte.

Hudson Reduces Price of Automatic Drive

Hudson has reduced the price of its Super-Matic drive by $13.29, bringing it down to $199.31. Hudson introduced the Super-Matic automatic transmission, which includes an overdrive, last fall as optional equipment.

Ford Pension Plan Goes Into Effect

Despite lack of agreement on a definite cents per hour commitment by the company, Ford Motor Co.'s $100 a month pension plan went into effect March 1. The company and the union have agreed on application forms and procedures to be used in applying for benefits and have designated representatives to sit on the six-man board which will administer the plan. It is estimated that by the end of this month about 3000 workers will have taken advantage of the opportunity to retire under the program, with another 2000 eligible employes remaining on the payroll until mandatory retirement at 68 becomes effective. It is reported that the dispute centering around a definite 8¾ cents per hour commitment by the company for the pension and insurance program will be resolved by the umpire. The ruling is considered extremely important to the union and to the industry because of its effect on Chrysler negotiations and the forthcoming reopening of the GM contract.

Mercury Offers Stripped Model For $100 Less

Ford's Lincoln-Mercury Div. is in limited production of a stripped-down, six-passenger coupe model in response to a request by some dealers for such a vehicle. No exterior changes have been made with the exception of the elimination of chrome moldings from the windshield and rear window. In the interior, however, about 20 items have been eliminated, such as front door arm rests, electric clock, glove box lights and lock, and floor mats are of rubber instead of fibre. Also, rear windows are fixed instead of being hinged so that they can be opened. Selling price has been reduced more than $100 with the delivered price in Detroit $1962, compared with $2081 for the comparable model with original appointments.

White Announces New Light Delivery Truck

The White Motor Co. has announced a new model light delivery truck in the 3000 Series. The new model 3014 has a gross weight of 16,500 lb, and features the power-lift cab for complete front - end accessibility. This model's bed frame is said to be eight

LUXURIOUSLY IMPERIAL

The new 1950 Cadillac Series 75 seven-passenger Imperial sedan, shown here, and the Series 75 touring sedan, are two new models in this line. With a wheelbase of 146¾ in., this model's front compartment, trimmed completely in black leather, is separated from the rear by a hydraulically-operated division glass. Controls for raising and lowering this division glass are located in the rear compartment. The 1950 Cadillacs were described on page 42, Jan. 15th AUTOMOTIVE INDUSTRIES.

inches lower than any comparable model of the same tire size.

Government to Ask Bids on Tucker Plant

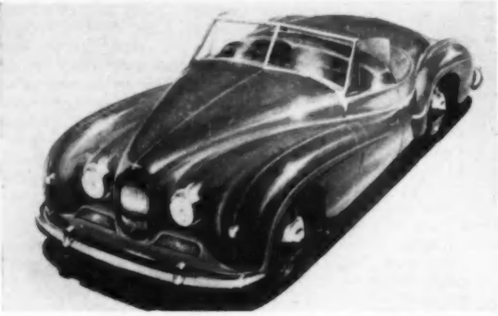
The government this month will advertise for bids on the former Dodge-Chrysler plant at Chicago where the Tucker Corp. had planned to build its revolutionary car. The Tucker lease and option to buy expired Dec. 3. Recently a group of Tucker dealers and distributors filed with trustees of the defunct corporation a reorganization plan which would require court approval. It called for raising $25 million through a preferred stock issue and an additional $12 million worth of debentures at the rate of $200 as each of 60,000 cars were to be delivered.

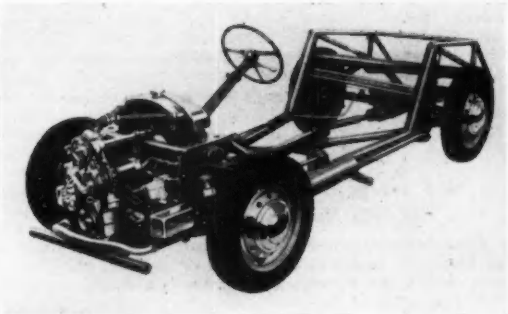
To Show New Jowett Jupiter in New York City

The Jowett Jupiter (see cut on this page), developed from the Jowett Javelin, has a horizontally-opposed four-cyl engine with a 2.85 in. bore and a 3.54 in. stroke, with pushrod operated valves in cast iron heads. Compression ratio is either 7.2 or 8.1 to 1 according to the fuel available, and the engine peaks at 4500 rpm. Special features for the sports model are twin Zenith carburetors and an oil radiator back of the engine. The chassis is entirely special and comprises a rigid bulkhead to which the front suspension system is attached, the engine being mounted ahead of this bulkhead and the radiator mounted on it. Frame construction is welded chrome molybdenum steel tubes. The car has a four speed transmission and a rear axle ratio of 4 to 1. The Spicer drive shaft has a rubber mounted center bearing. Suspension system follows that of the Jowett, with torsion bars front and rear.

British Announce First Gas Turbine Car

A British automotive concern has claimed to have built the world's first gas-turbine powered automobile. The clutchless model, dubbed the Whizzer, is run on kerosene and develops 100 hp. The Rover Company, Birmingham, England, invited engineers to the first showing on March 2.





COMING ATTRACTION

Britain's latest sports car, the Jowett Jupiter, will make its first public appearance in its completed form at the British Car Show, April 15-23, in New York. The two-three passenger runabout, with aluminum alloy body, weighs 1510 lb. Powered by a four-cyl engine, with a piston displacement of about 90.5 cu in., developing 60.5 hp, it is said to have a speed of over 90 mph.

International Harvester Plans Research Plant

International Harvester Co. will build a $6.5 million engineering development facility at Fort Wayne, Ind., as part of its expanded testing and research program. The Fort Wayne development will be for use by the motor truck division and will be adjacent to the Harvester factory there.

Hufstader Elected Head of AMA Sales Group

William F. Hufstader, vice president in charge of distribution for GM, has been elected chairman of the sales managers committee of AMA. He succeeds Karl M. Greiner, Packard vice president in charge of sales. Mr. Hufstader has been a member of the committee since joining the GM central office staff in 1948, after 15 years as general sales manager for Buick.

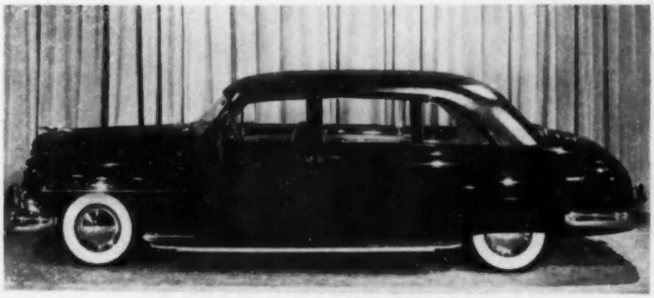
Car Makers Guessed Right on Coal Strike Settlement

The automobile industry's gamble on the coal strike has paid off. The manufacturers maintained production right up to the end of the strike on a day-to-day basis, betting that the strike would be settled before they had to suspend operations. The only casualties were Federal Motor Truck and Packard, which was down for two days. The question now is whether delayed action effects of the strike will greatly retard production in the weeks ahead. Both Ford and GM expect to continue on a current basis through March, but without reinstatement of overtime work in those operations where it had been eliminated. Immediately after the strike the companies reported that they were expecting to maintain schedules, but the outlook still was clouded as to when they could be stepped up to the boom proportions originally planned. The key question is how much steel was lost because of the strike. The steel companies also played a bold game by maintaining production as long as possible and the production rate even during the last week of the strike, although somewhat reduced, was not off nearly as much as had been predicted. Immediately following the strike, inactive furnaces were again being put into operation and steel making will pick up rapidly from here on in. The general feeling is that there is bound to be some effect since the loss in finished steel is greater than the reduction in the ingot rate. However, there is considerable optimism that during April, production of cars and trucks will step up markedly and if the Chrysler strike

is settled by that time, output should be at a near record level.

Attendance Hit 40,000 at Pacific Automotive Show

A record-breaking crowd of 40,000 attended the 1950 Pacific Automotive Show held in San Francisco. Sponsored by wholesalers in the 11 western states, the show displayed the products of 303 manufacturers from throughout the country. Seattle was selected as the site for the 1951 show.



BOUND FOR THE WHITE HOUSE

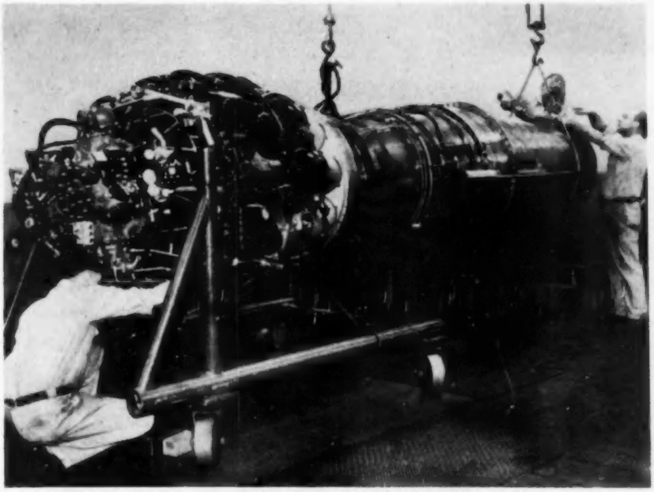
Designed by Lincoln-Mercury engineers and equipped with special running boards for secret service agents, this is the first of nine custom Lincoln Cosmopolitan limousines and one seven-passenger convertible (see page 15, March 1st AUTOMOTIVE INDUSTRIES) delivered to President Truman.

Pratt & Whitney Announces New Jet Engine

United Aircraft Corp.'s Pratt & Whitney Aircraft Div. has announced the new J-48 Turbo-Wasp jet engine (see cut on this page) with a basic dry rating of 6250 lb static thrust at sea level. Equipped with water injection and an afterburner, the J-48 is a centrifugal flow turbo-jet using a single stage compressor with double faced impeller and double air entries. It has single stage turbine and nine combustion chambers, and will operate on kerosene, gasoline or special jet fuels. The overall diameter of the J-48 is 50 in. with a length of 8 ft, 10¾ in. without afterburner. It weighs less than 2000 lb. Pratt & Whitney Aircraft and Rolls-Royce Ltd. of England collaborated in developing the J-48, and the British version of the J-48 is known as the Tay. It has the same basic dry thrust rating of 6250 lb, and is scheduled for installation in an experimental British jet transport.

Cummins to Use Revised Version of JS in Indianapolis Race

The Cummins Engine Co., Inc., Columbus, Ind., has stated that the Diesel engine it is building for the Cummins Diesel Special (see page 24, Feb. 1, AUTOMOTIVE INDUSTRIES) for the 1950 Indianapolis Race is a highly supercharged, revised version of the new high-speed Cummins JS engine. It is a four stroke engine with a piston displacement of 401 cu in. It has 4.125 in. bore with a 5-in. stroke. Capable of turning up to 4000 rpm, the racing engine is now under test in the Cummins laboratory. The Cummins Diesel engine will be installed in a modern tubuiar-frame chassis under construction in the Kurtis-Kraft plant at Los Angeles. The overall appearance of the Cummins Diesel Special will be very similar to conventional race cars, and it will have a 104 in. wheelbase, and its body height from the ground line will be about 38 in., which is about 10⅛ in. lower than the previous Cummins Diesels. The rear axle will be a Conze quick-change racing axle.



MOST POWERFUL WASP

The new J-48 Turbo-Wasp jet engine shown above, recently announced by United Aircraft Corp.'s Pratt & Whitney Aircraft Div., is reportedly the most powerful jet engine now flying in the U. S. This engine is being used in the Grumman Panther F9F-5 and the North American F-93A.

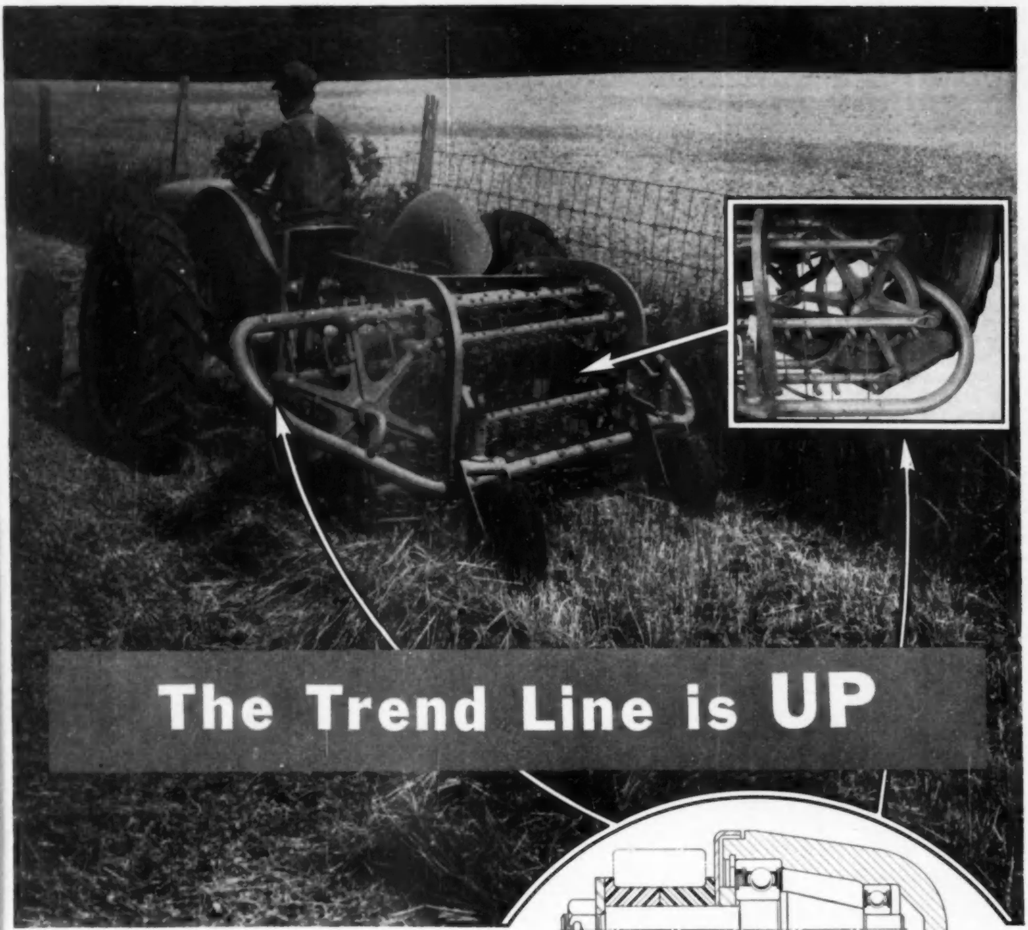
Willys Three-Months Net Reported at $75,000

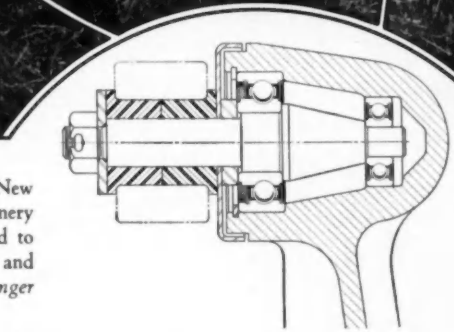
Willys-Overland Motors had a net profit of $75,205 for the fourth quarter of last year. During the period production had been reduced to adjust field inventories in expectation of the new and expanded program coming up this spring. This month a heavy production program is expected to get started on the regular line of Willys vehicles with a large order for Jeeps from the government to be started next summer.

Chrysler Starts Tooling for New Engines

Suppliers of machine tools and equipment report that Chrysler Corp. is in the early stages of tooling for its new engines. One is a new V-8 and the other an in-line six, according to reports. Both are of the overhead valve type.

(*Turn to page 186, please*)





• Significant is the steadily mounting use of New Departure self-sealed ball bearings in farm machinery —significant because it indicates the rising trend to bearings that not only save the farmer *time, labor* and *lubricating cost*, but give him *better running—longer lasting* equipment.

When you find up-to-the-minute machines like the new Ferguson Side-Delivery Rake, with New Departure sealed bearings in important positions, you *know* that *this* equipment is specifically designed for exceptional efficiency with lowest operating and upkeep costs.

24 New Departure ball bearings in the reel spiders supporting the tooth bars are lubricated-for-life—mean 12 positions that the farmer can forget.

Nothing Rolls Like a Ball

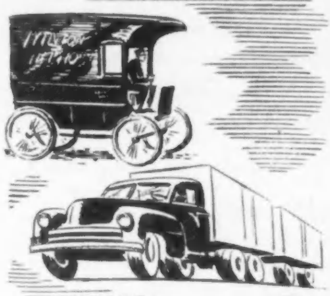
NEW DEPARTURE BALL BEARINGS

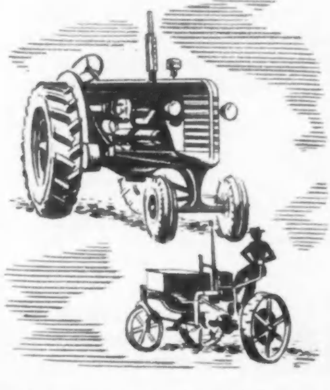
NEW DEPARTURE Division of GENERAL MOTORS CORPORATION · BRISTOL, CONNECTICUT BRANCHES IN ALL PRINCIPAL CITIES

AUTOMOTIVE INDUSTRIES

32nd Annual Number

MID-CENTURY STATISTICAL ISSUE





50 Years of Progress In U. S.

MOTOR VEHICLES

During the past 50 years motor vehicle production has grown from 4192 in 1900 to the peak of 6,243,572 in 1949. In this half-century a total of 108,400,503 motor vehicles have been produced of which 88,037,559 were passenger cars and 20,332,944 were trucks and buses.

Registrations of passenger cars in 1900 amounted to approximately 8000, but by the end of 1949 they had increased to 35,904,770. No truck and bus registrations were recorded until 1904 when 700 were registered. Today 7,711,667 are operating upon our highways. In the United States there are about 78 per cent of the world's cars and 52 per cent of the trucks.

AIRCRAFT

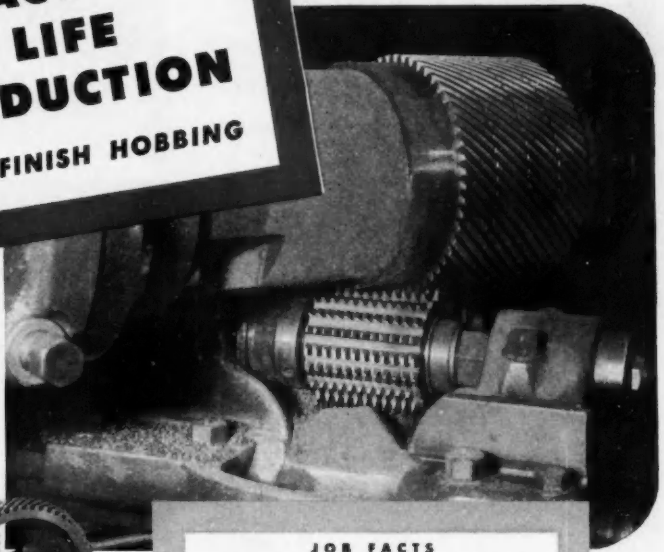
While motor vehicle production was growing at an increasingly rapid rate aircraft production was progressing but at a much slower rate. In 1913 only 43 units were built. During 1918, mostly for military purposes, 14,020 were built, but in the intervening years up to 1940, there were less than 1000 produced in any one year. In 1944 the peak of production of aircraft was reached with 96,318 units, but following World War II production dropped to 3545 civil aircraft in 1949. No military aircraft data are available. From 1913 to date about 447,000 aircraft have been produced in the United States and registrations of all civil aircraft at the end of 1949 numbered 92,622.

TRACTORS

Tractor production records have not been kept as carefully as other units of the automotive industries, but from available data it appears as though about 4500 units were produced in 1910. In 1949 approximately 750,000 wheel, track-laying and garden types were produced. It is estimated that close to 7,000,000 tractors of all types have been manufactured during the past 50 years.

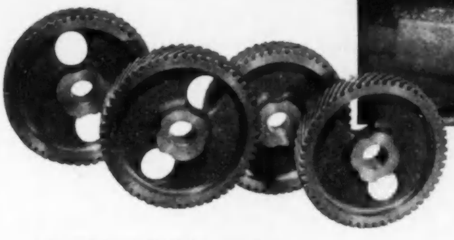
Get ACCURACY TOOL LIFE *and* PRODUCTION

WHEN SEMI-FINISH HOBBING



Use

BARBER-COLMAN "Multithread" HOBS



"Multithread" Hobs are the newest contribution to high speed gear hobbing. With these new *"Multithreads"*, gears are hobbed more rapidly so that frequently the number of machines required for semi-finishing can be greatly reduced. Their capacity for accuracy, tool life *and* production is established by their performance in this and many other jobs.

On these truck camshaft gears, for example, hobbing time has been cut *one-third*. Tool life averages 800 pieces per sharpening. Tolerances within .0006" are maintained on involute and pitch diameter.

COMPARE THESE JOBS!
Production records on 100 hobbing jobs. Write for Hobbing Data File No. 7612

JOB FACTS

Operation — Semi-Finish Hob Helical Gears, 4 per load, 10 pitch, 54 teeth, 7" O.D.
Machine — Barber-Colman No. 16-16
Material — Cast Iron
Hobs — B-C "Multithreads" 4" x 4" x taper bore
Fl-to-Fl — 25 minutes per load
Feed — .065"/per rev.
Speed — 82.5 RPM
Tool Life — 800 pieces per hob sharpening
Accuracy — within .0006" involute

Check these Job Facts and see if they compare with results on your semi-finishing jobs. Write Barber-Colman Engineers for estimates on your work.

Barber-Colman Company

GENERAL OFFICES AND PLANT, 7812 LOOMIS ST., ROCKFORD, ILLINOIS, U. S. A.

Said Mr. Winniger† to Mr. Hamilton‡

† Typical Manufacturer ‡ New Britain Sales Engineer

You bet, we're worried about manufacturing cost! Competition is cutting prices, wages are out of sight, and we have a pension plan staring us right in the face. But we don't operate a shop full of obsolete machines, our staff is fairly modern. Cutting costs further isn't going to be an easy matter.

Speaking of cutting costs, here's a piece that used to be turned out on three machines in a shop as modern as yours.

You sold a New Britain to replace the other machines?

Yes, it's a job that involves boring thru a seven inch piece. The other machine didn't have enough throw on the tool slide to bore thru, so the piece had to be re-chucked in a second operation. We go right thru in the one setting. Work of this type is handled on our standard machine eliminating special expensive holders and tooling.

Of course that saved a lot of handling and idle time.

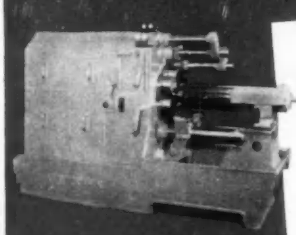
It saved a whole machine and increased production besides. We also finish ream in the sixth position which eliminates a third boring operation leaving only a honing operation to bring the bore to within .0003 tolerance and surface finish.

A job like that interests me particularly—because it isn't some tricky special piece, but the sort of work you might find in any shop. When you can find a way to make a big cost reduction on this sort of part, you have something worth talking about. Have you got one of your New Britain Cost History sheets that gives all the dope on it?

We'll send it to you in a few days. Meanwhile, perhaps you'd like to have me do some checking on pieces you're turning out now, or getting ready to make.

Want to help me with my worrying, eh? Okay, I'll just take you up on that—Wait'll I phone Joe, and have him take you thru the shop.

Call on your New Britain Sales Engineer to help you find profit opportunities in metal cutting. Meanwhile, let us send you "It Can Be Done" with up-to-date cost histories on this and other specific pieces.



NEW BRITAIN MODEL [illegible]
SIX SPINDLE AUTOMATIC
CHUCKING MACHINE

THE NEW BRITAIN MACHINE CO.

NB

NEW BRITAIN

Automatics

THE NEW BRITAIN MACHINE COMPANY
NEW BRITAIN-GRIDLEY MACHINE DIVISION
NEW BRITAIN, CONNECTICUT

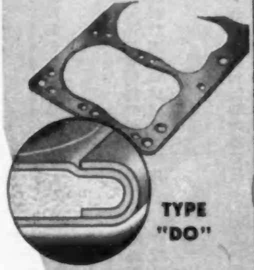
The Pioneer's Skill available only in Victor Sealing Products

It's a matter of record! 116 basic patents attest Victor's exclusive pioneering and development of today's highly efficient gasket and oil seal designs.

From Victor's pioneering come the skill and sound knowledge that back the accuracy of each Victor recommendation, and make each Victor product a superior sealing product. It's your assurance of extra value performance in every application of Victor gaskets and oil seals.

Victor Mfg. & Gasket Co.,
P.O. Box 1333, Chicago 90, Ill.

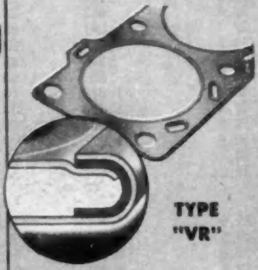
TYPICAL VICTOR DEVELOPMENTS ... IN GASKETS



TYPE "DO"

DOUBLE OVERLAP CONSTRUCTION in top and bottom layers of copper or steel, formed around cylinder openings, and encasing asbestos.

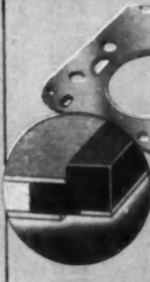
Patent 1,815,601



TYPE "VR"

STEEL GROMMET REINFORCEMENT around cylinder openings, with copper or steel layers encasing asbestos.

Patent 1,748,582



VICTOPRENE GROMMET AT OIL HOLE

Resilient synthetic rubber grommet effectively seals oil transmitted under pressure to operating parts of engine, or coolants.

Patent 2,395,243

... IN OIL SEALS

TYPE "H"

MOLDED VICTOPRENE sealing element bonded to metal shell; double outer wall construction; spring loaded.

Patent 2,240,332

TYPE "K"

Molded hammerhead design VICTOPRENE sealing element giving controlled flexible lip pressure, and bonded to preformed metal washer. Double outer wall construction; spring loaded.

Patents 2,405,279 and 2,319,067

SPECIAL SPLIT SEAL

Leakproof seal for rear bearing crankshaft of internal combustion engines. Fabric-faced Victoprene sealing element with embedded spring wire, molded to two semi-circular steel channels.

Patent 2,209,578

116 U.S. PATENTS ISSUED TO VICTOR

GASKETS

1,241,587	1,843,297
1,338,617	1,846,401
1,398,612	1,846,402
1,472,133	1,853,175
1,626,962	1,862,703
1,692,857	1,864,328
1,740,780	1,864,854
1,748,582	1,893,881
1,768,995	1,904,651
1,770,548	1,911,484
1,771,596	1,913,736
1,779,616	1,932,538
1,789,594	1,932,539
1,789,595	1,956,183
1,789,770	1,957,798
1,793,423	1,974,633
1,798,246	1,985,473
1,804,574	1,985,475
1,814,283	RE-19,874
1,815,601	2,021,571
1,815,602	2,026,854
1,819,694	2,070,918
1,823,284	2,092,231
1,823,341	2,127,372
1,823,342	2,130,110
1,828,471	2,157,102
1,829,248	2,209,230
1,835,356	2,211,247
1,838,496	2,289,620
1,839,336	2,349,235
2,395,243	

OIL SEALS

1,938,648	2,210,748
1,985,474	2,210,823
1,992,790	2,212,291
2,022,304	2,213,116
2,040,379	2,224,449
2,055,917	2,227,771
2,055,918	2,233,147
2,061,153	2,233,359
2,070,126	2,233,902
2,071,403	2,235,735
2,073,768	2,240,252
2,092,237	2,240,332
2,114,908	2,248,761
2,116,240	2,289,607
2,145,928	2,289,608
2,149,147	2,289,659
2,161,767	2,301,993
2,166,293	2,319,067
2,167,603	2,330,104
2,172,325	2,334,349
2,173,006	2,348,586
2,185,790	2,348,587
2,191,873	2,367,403
2,208,482	2,367,411
2,209,578	2,405,279
2,209,750	2,468,247
2,210,723	2,483,988
2,485,011	

BETTER SEALING PRODUCTS THROUGH RESEARCH

VICTOR GASKETS AND OIL SEALS

VICTOR

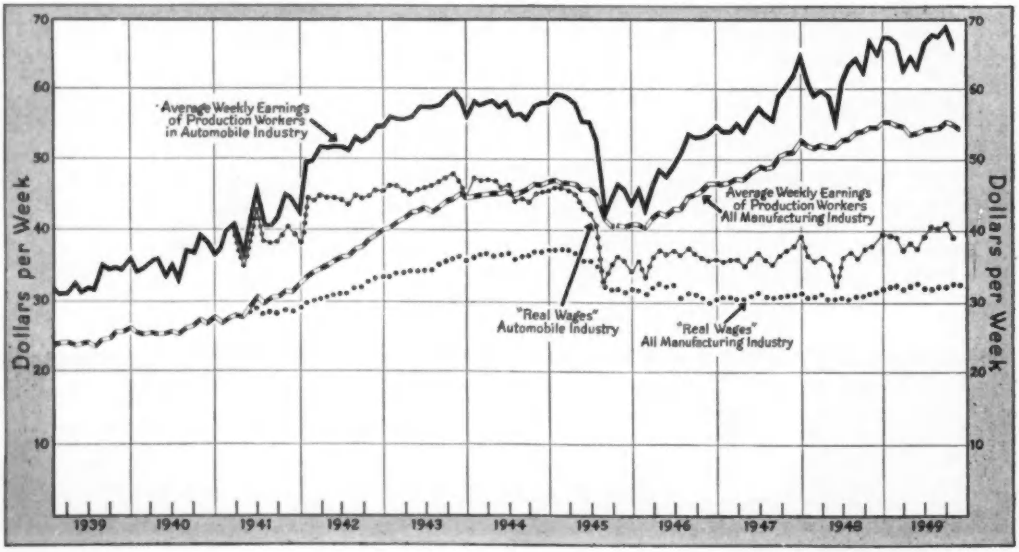
Earnings of Production Workers

Hourly and Weekly Wages and the "Real Weekly Wages" of Production Workers in the Automobile Industry Versus All Manufacturing Industries

	AUTOMOBILE INDUSTRY				ALL MANUFACTURING INDUSTRIES			
	Average Earnings		"Real" Weekly Wages‡	Average Weekly Hrs. per Worker	Average Earnings		"Real" Weekly Wages‡	Average Weekly Hrs. per Worker
	Hourly	Weekly			Hourly	Weekly		
1935	$.739	$27.41	$27.94	37.1	$.550	$20.13	$20.52	36.6
1936	.774	29.75	30.02	38.5	.556	21.78	21.98	39.2
1937	.891	31.94	31.10	35.9	.624	24.05	23.42	38.6
1938	.925	30.45	30.21	32.9	.627	22.30	22.12	35.6
1939	.929	32.91	33.11	35.4	.633	23.86	24.00	37.7
1940	.948	35.76	35.69	37.7	.661	25.20	25.15	38.1
1941	1.042	41.25	39.21	39.6	.729	29.58	28.12	40.6
1942	1.169	51.94	44.58	44.4	.853	36.65	31.46	42.9
1943	1.234	56.94	46.07	46.2	.961	43.14	34.90	44.9
1944	1.270	57.82	46.07	45.5	1.019	46.08	36.72	45.2
1945	1.256	51.99	40.49	41.3	1.023	44.39	34.57	43.4
1946	1.333	50.22	36.05	37.6	1.084	43.74	31.40	40.4
1947	1.473	57.44	36.08	39.0	1.221	49.25	30.94	40.3
1948	1.616	62.10	36.27	38.4	1.327	53.15	31.04	40.1
1949	1.694†	66.09†	39.04†	39.0†	1.402	54.79†	32.37†	39.2
1949								
January	$1.702	$67.74	$39.64	39.8	$1.405	$55.50	$32.47	39.5
February	1.694	66.91	39.59	39.5	1.401	55.20	32.66	39.4
March	1.670	62.96	37.14	37.9	1.400	54.74	32.29	39.1
April	1.678	64.77	38.17	38.6	1.401	53.80	31.70	38.4
May	1.695	63.22	37.36	37.3	1.401	54.08	31.96	38.6
June	1.699	66.94	39.47	39.4	1.405	54.51	32.14	38.8
July	1.704	68.67	40.75	40.3	1.408	54.63	32.42	38.8
August	1.703	67.78	40.15	39.9	1.399	54.70	32.40	39.1
September	1.716	69.33	40.88	40.4	1.407	55.72	32.85	39.6
October	1.689	65.87	39.09	39.0	1.392	55.26	32.80	39.7
November	1.687	64.61	38.32	38.3	1.393	54.74	32.47	39.3
December	1.719	69.28	41.36	40.3	1.410	56.40	33.67	40.0

† Average for first eleven months. ‡ Weekly earnings adjusted to Consumers' Price Index. * Based on data from Bureau of Labor Statistics.

WEEKLY EARNINGS AND "REAL WEEKLY WAGES"



and the Cost of Living

Cost of Commodities Needed for Living

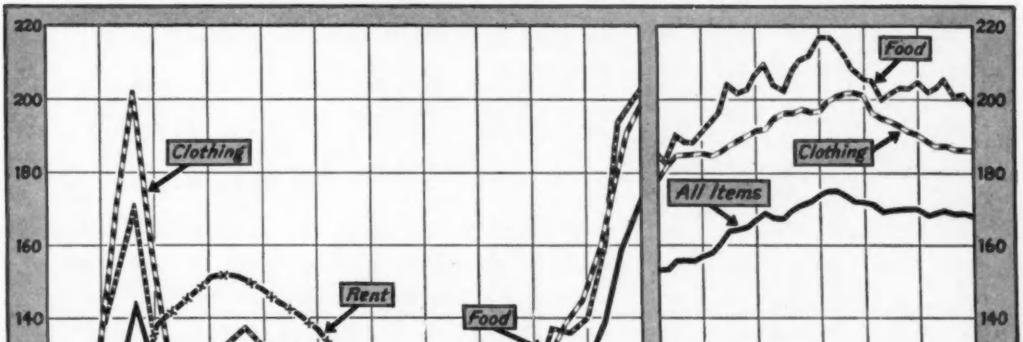
Consumers' Price Indexes

Based on Monthly Average of 1935-1939 = 100

Monthly Average	Combined Index	Apparel	FOOD Total	FOOD Cereals and Baking Products	FOOD Dairy Products	FOOD Fruits and Vegetables	FOOD Meats, Fish and Poultry	Fuel, Electricity and Ice	House Furnishings	Rent	Miscel-laneous
1929	122.5	115.3	132.5	.....	.....	.....	.....	112.5	111.7	141.4	104.6
1930	119.4	112.7	126.0	.....	.....	.....	.....	111.4	108.9	137.5	105.1
1931	108.7	102.6	103.9	.....	.....	.....	.....	108.9	98.0	130.3	104.1
1932	97.6	90.8	86.5	.....	.....	.....	.....	103.4	85.4	116.9	101.7
1933	92.4	87.9	84.1	.....	.....	.....	.....	100.0	84.2	100.7	98.4
1934	95.7	96.1	93.7	.....	.....	.....	.....	101.4	92.8	94.4	97.9
1935	98.1	96.8	100.4	101.8	97.5	98.7	99.9	100.7	94.8	94.2	98.1
1936	99.1	97.6	101.3	100.7	101.6	104.8	98.9	100.2	96.3	96.4	98.7
1937	102.7	102.8	105.3	103.3	105.4	107.9	105.8	100.2	104.3	100.9	101.0
1938	100.8	102.2	97.8	99.8	99.6	93.2	98.9	99.9	103.3	104.1	101.5
1939	99.4	100.5	95.2	94.5	95.9	94.5	96.5	99.0	101.3	104.3	100.7
1940	100.2	101.7	96.6	96.8	101.4	96.5	95.8	99.7	100.5	104.6	101.1
1941	105.2	106.3	105.5	97.9	112.0	103.2	107.5	102.2	107.3	106.2	104.0
1942	116.5	124.2	123.9	105.1	125.4	130.8	126.0	105.4	122.2	108.5	110.9
1943	123.6	129.7	138.0	107.6	134.6	168.8	133.8	107.7	125.6	108.0	115.8
1944	125.5	138.8	136.1	108.4	133.6	168.2	129.9	109.8	136.4	108.2	121.3
1945	128.4	145.9	139.1	109.0	133.9	177.1	131.2	110.3	145.8	108.3	124.1
1946	139.3	160.2	159.6	125.0	165.1	182.4	161.3	112.4	159.2	108.6	128.8
1947	159.2	185.7	193.8	155.4	186.2	199.4	217.1	121.2	184.4	111.2	139.9
1948	171.2	198.0	210.2	170.9	204.8	205.2	246.5	133.9	195.8	117.4	149.9
1949	169.1	190.1	201.9	169.7	186.7	206.1	233.3	137.5	189.0	120.8	154.6
1949											
January	170.9	196.5	204.8	170.5	196.0	205.2	235.9	138.2	196.5	119.7	154.1
February	169.0	195.1	199.7	170.0	192.5	213.7	221.4	138.8	195.6	119.9	154.1
March	169.5	193.9	201.6	170.1	190.3	214.5	229.6	138.9	193.8	120.1	154.4
April	169.7	192.5	202.8	170.3	184.9	218.6	234.4	137.4	191.9	120.3	154.6
May	169.2	191.3	202.4	170.1	182.6	220.7	232.3	135.4	189.5	120.4	154.5
June	169.6	190.3	204.3	169.7	182.0	217.9	240.6	135.6	187.3	120.6	154.2
July	168.5	188.5	201.7	169.5	182.2	210.2	236.0	135.6	186.8	120.7	154.3
August	168.8	187.4	202.6	169.4	184.9	201.9	239.5	135.8	184.8	120.8	154.8
September	169.6	187.2	204.2	168.7	185.3	199.8	243.6	137.0	185.6	121.2	155.2
October	168.5	186.8	200.6	169.1	186.7	194.5	235.1	138.4	185.2	121.5	155.2
November	168.6	186.3	200.8	169.2	186.4	202.0	229.1	139.1	185.4	122.0	154.9
December	167.5	185.8	197.3	169.2	186.2	192.2	223.2	139.7	185.4	122.2	155.5

* Bureau of Labor Statistics.

CONSUMERS' PRICE INDEX FOR SELECTED COMMODITIES



Production

PASSENGER CARS • TRUCKS • BUSES • TRACTORS • TRAILERS

50 Years of Motor Vehicle Production

Factory Sales and Their Wholesale Value, U.S. Plants

Year	PASSENGER CARS			TRUCKS AND BUSES			TOTAL	
	Number of Units	Wholesale Value	Average Wholesale Price	Number of Units	Wholesale Value †	Average Wholesale Price	Number of Units	Wholesale Value
1900	4,192	$4,899,443	$1,169				4,192	$4,899,443
1901	7,000	8,183,000	1,169				7,000	8,183,000
1902	9,000	10,395,000	1,155				9,000	10,395,000
1903	11,235	13,000,000	1,157				11,235	13,000,000
1904	22,130	23,357,692	1,055	700	$1,272,747	$1,818	22,830	24,630,439
1905	24,250	38,670,000	1,594	750	1,330,000	1,773	25,000	40,000,000
1906	33,200	61,460,000	1,851	800	1,440,000	1,800	34,000	62,900,000
1907	43,000	91,620,000	2,131	1,000	1,780,000	1,780	44,000	93,400,000
1908	63,500	135,250,000	2,129	1,500	2,550,000	1,700	65,000	137,800,000
1909	123,990	159,765,721	1,288	3,297	5,333,683	1,618	127,287	165,099,404
1910	181,000	215,340,000	1,189	6,000	9,660,000	1,610	187,000	225,000,000
1911	199,319	225,000,000	1,128	10,681	21,000,000	1,966	210,000	246,000,000
1912	356,000	335,000,000	941	22,000	43,000,000	1,954	378,000	378,000,000
1913	461,500	399,902,000	866	23,500	44,000,000	1,872	485,000	434,902,000
1914	548,139	420,838,378	768	24,900	44,219,096	1,776	573,039	465,057,474
1915	895,930	575,978,000	643	74,000	125,800,000	1,700	969,930	701,778,000
1916	1,525,578	921,378,000	604	92,130	161,000,000	1,747	1,617,708	1,082,378,000
1917	1,745,792	1,053,505,781	603	128,157	220,982,668	1,724	1,873,949	1,274,488,449
1918	943,436	801,937,925	850	227,250	434,168,992	1,910	1,170,686	1,236,106,917
1919	1,651,625	1,365,395,415	827	224,731	371,422,820	1,653	1,876,356	1,736,818,235
1920	1,905,560	1,809,170,963	949	321,789	423,249,410	1,315	2,227,349	2,232,420,373
1921	1,468,067	1,038,191,037	707	148,052	166,070,810	1,122	1,616,119	1,204,261,847
1922	2,274,185	1,494,513,991	657	269,991	226,049,658	837	2,544,176	1,720,563,649
1923	3,624,717	2,196,272,116	606	409,295	308,537,929	754	4,034,012	2,504,810,045
1924	3,185,881	1,970,096,559	618	416,659	318,580,580	765	3,602,540	2,288,677,139
1925	3,735,171	2,458,370,026	658	530,659	458,400,277	864	4,265,830	2,916,770,303
1926	3,783,987	2,640,064,519	698	516,947	452,123,435	875	4,300,934	3,092,187,954
1927	2,936,533	2,164,670,891	737	464,793	420,130,624	904	3,401,326	2,584,801,515
1928	3,815,417	2,576,489,623	675	543,324	437,132,258	804	4,358,759	3,013,621,881
1929	4,587,400	2,847,118,562	621	771,020	566,029,644	734	5,358,420	3,413,148,206
1930	2,784,745	1,645,398,523	591	571,241	389,436,690	682	3,355,986	2,034,835,213
1931	1,973,090	1,111,273,774	563	416,648	262,417,542	630	2,389,738	1,373,691,316
1932	1,135,491	618,291,168	544	235,187	136,193,336	579	1,370,678	754,484,504
1933	1,573,512	762,736,512	485	346,545	186,069,314	537	1,920,057	948,805,826
1934	2,177,919	1,147,116,195	527	575,192	320,143,667	557	2,753,111	1,467,259,862
1935	3,252,244	1,709,425,904	526	694,690	379,407,751	546	3,946,934	2,088,833,655
1936	3,669,528	2,015,646,217	549	784,587	462,820,474	590	4,454,115	2,478,466,691
1937	3,915,889	2,243,732,380	573	893,085	534,494,873	598	4,808,974	2,778,227,253
1938	2,000,985	1,236,802,411	618	488,100	334,147,530	685	2,489,085	1,570,949,941
1939	2,866,796	1,765,189,067	616	710,496	494,829,231	696	3,577,292	2,260,018,298
1940	3,717,385	2,370,654,083	638	754,901	567,820,414	752	4,472,286	2,938,474,497
1941	3,779,682	2,567,205,996	679	1,060,820	1,069,799,855	1,008	4,840,502	3,637,005,851
1942	222,862	163,813,559	736	818,662	1,427,456,801	1,744	1,041,524	1,591,270,360
1943‡	139	101,799		699,689	1,451,794,475	2,076	699,828	1,451,896,274
1944‡	610	446,704		737,524	1,700,928,939	2,306	738,134	1,701,375,643
1945	69,532	57,254,655	823	655,683	1,181,955,532	1,803	725,215	1,239,210,187
1946	2,148,699	1,979,781,084	921	940,851	1,043,247,276	1,109	3,089,550	3,023,028,360
1947	3,558,178	3,963,896,000	1,114	1,239,744	1,709,843,000	1,378	4,797,922	5,672,518,000
1948	3,909,270	4,853,402,000	1,242	1,376,155	1,858,210,000	1,350	5,285,425	6,711,612,000
1949	5,114,269	6,806,000,000	1,331	1,129,303	1,433,000,000	1,269	6,243,572	8,239,000,000

Note: Table above ncludes sales of military vehicles. Prior to 1940 station wagons and other vehicles built on passenger car chassis are included with trucks. In 1940 and later years such vehicles built on passenger car chassis are included with passenger cars.

Values reported are for standard equipment only and exclude Federal excise taxes.

† A substantial part of the trucks reported comprises chassis only, without bodies; hence, the value of bodies for these chassis are not included.

‡ Actual value of passenger car factory sales for 1943 and 1944 are not available. Value figures are approximations based on the average value per unit in 1942. While production of passenger cars ended in February, 1942, some vehicles remained in factory stocks to be sold under rationing orders in 1943 and 1944

1949 Factory Sales to Domestic and Foreign Markets*

From Plants Located in the United States.

Month	Passenger Cars			Trucks and Buses			Total Motor Vehicles		
	Domestic	Foreign	Total	Domestic	Foreign	Total	Domestic	Foreign	Total
January	312,199	13,820	326,019	91,900	13,357	105,257	404,099	27,177	431,276
February	310,343	14,204	324,547	88,866	13,252	102,118	399,209	27,456	426,665
March	385,834	16,568	402,402	100,348	15,368	115,716	486,182	31,936	518,118
April	422,149	14,243	436,392	92,302	14,424	106,726	514,451	28,667	543,118
May	380,489	14,214	394,703	76,029	10,735	86,764	456,518	24,949	481,467
June	480,009	13,873	493,882	89,696	10,062	99,758	569,705	23,935	593,640
July	471,752	11,509	483,261	85,826	9,961	95,787	557,578	21,470	579,048
August	544,630	12,740	557,370	90,409	9,885	100,294	635,039	22,625	657,664
September	521,524	12,969	534,493	82,761	8,926	91,687	604,285	21,895	626,180
October	476,461	11,430	487,891	76,859	8,167	85,026	553,320	19,597	572,917
November	373,838	8,113	381,951	66,369	6,688	73,057	440,207	14,801	455,008
December	284,097	7,261	291,358	61,137	5,976	67,113	345,234	13,237	358,471
Total	4,963,325	150,944	5,114,269	1,002,502	126,801	1,129,303	5,965,827	277,745	6,243,572
Per Cent of Total	97.05%	2.95%	100%	88.77%	11.23%	100%	95.55%	4.45%	100%

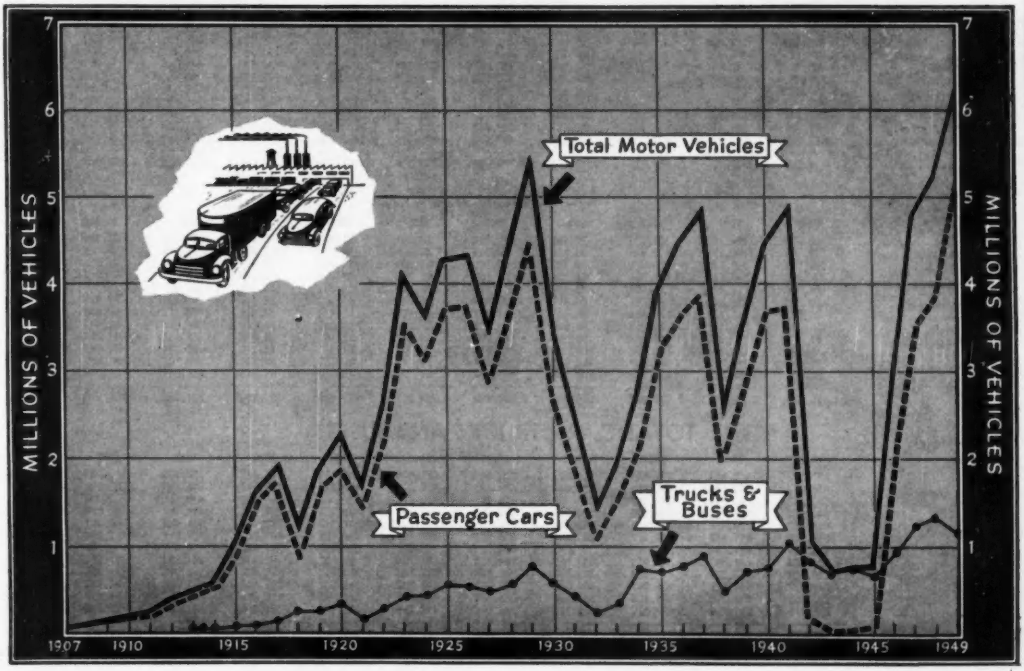
* Automobile Manufacturers Association.

Passenger Car Factory Sales by Body Types*

Body Type	1949		1948		1947		1940	
	Units	% of Total	Units	% of Total	Units	% of Total	Units	% of Total
4-Door Sedans	2,599,877	50.83	1,968,946	50.37	1,745,100	49.04	1,559,215	41.94
2-Door Sedans, Coaches and Coupes (1)	2,052,561	40.14	1,554,687	39.77	1,455,097	40.89	2,014,386	54.19
Business Coupes	83,429	1.63	63,372	1.62	82,944	2.33	(3)	.....
Convertibles	259,334	5.07	196,597	5.03	173,863	4.89	105,335	2.83
Station Wagons (2)	88,410	1.73	102,463	2.62	79,638	2.24	25,098	.68
Chassis	30,658	.60	23,205	.59	21,536	.61	13,351	.36
Total	5,114,269	100.00	3,909,270	100.00	3,556,178	100.00	3,717,385	100.00

(1) Does not include Business Coupes. (2) Does not include those built on truck chassis. (3) Included with 2-Door Sedans.
* Automobile Manufacturers Association.

THE PEAKS AND VALLEYS OF CAR AND TRUCK PRODUCTION



Foreign Markets Take 4.4% U. S. Production—1949

Factory Sales to Domestic and Foreign Markets

Year	Passenger Cars Total	Passenger Cars Domestic Market	Passenger Cars Foreign Market	Passenger Cars % Foreign	Trucks and Buses* Total	Trucks and Buses* Domestic Market	Trucks and Buses* Foreign Market	Trucks and Buses* % Foreign	Total Motor Vehicles Total	Total Motor Vehicles Domestic Market	Total Motor Vehicles Foreign Market	Total Motor Vehicles % Foreign
1921	1,468,067	1,417,017	51,050	3.5	148,052	135,483	12,569	8.5	1,616,119	1,552,500	63,619	3.9
1922	2,274,185	2,169,185	105,000	4.6	269,991	247,593	22,398	8.3	2,544,176	2,416,778	127,398	5.0
1923	3,624,717	3,449,658	175,059	4.8	409,295	349,077	60,218	14.7	4,034,012	3,798,735	235,277	5.8
1924	3,185,881	2,968,711	217,170	6.8	416,695	340,565	76,104	18.3	3,602,540	3,309,266	293,274	8.1
1925	3,735,171	3,419,072	316,099	8.5	530,659	418,064	112,595	21.2	4,265,830	3,837,136	428,694	10.0
1926	3,783,987	3,494,791	289,196	7.6	516,947	413,080	103,867	20.1	4,300,934	3,907,871	393,063	9.1
1927	2,936,533	2,604,491	332,042	11.3	464,793	330,455	134,338	29.0	3,401,326	2,934,946	466,380	13.7
1928	3,815,417	3,396,516	418,901	11.0	543,342	379,530	163,812	30.1	4,358,759	3,776,046	582,713	13.4
1929	4,587,400	4,136,306	451,095	9.8	771,020	488,353	282,667	36.7	5,358,420	4,624,658	733,762	13.7
1930	2,784,745	2,536,981	247,764	8.9	571,241	413,290	157,951	10.1	3,355,986	2,950,271	405,715	12.1
1931	1,973,090	1,838,786	134,304	6.8	416,648	309,029	107,619	25.8	2,389,738	2,147,815	241,923	10.1
1932	1,135,491	1,062,376	73,115	6.4	235,187	187,837	47,350	20.1	1,370,678	1,250,213	120,465	8.8
1933	1,573,512	1,475,357	98,155	6.2	346,545	268,117	78,428	22.6	1,920,057	1,743,474	176,583	9.2
1934	2,177,919	1,993,763	184,156	8.4	575,192	448,826	126,366	22.0	2,753,111	2,442,589	310,522	11.3
1935	3,252,244	3,041,877	210,367	6.5	694,690	570,216	124,474	17.9	3,946,934	3,612,093	334,841	8.5
1936	3,669,528	3,458,051	211,477	5.8	784,587	649,997	134,590	17.2	4,454,115	4,108,048	346,067	7.8
1937	3,915,889	3,643,386	272,503	6.9	893,085	689,674	203,411	22.8	4,808,974	4,333,060	475,914	9.9
1938	2,000,985	1,810,938	190,047	9.5	488,100	352,207	135,893	27.8	2,489,085	2,163,145	325,940	13.1
1939	2,866,796	2,702,181	164,615	5.7	710,496	558,973	151,523	21.3	3,577,292	3,261,154	316,138	8.8
1940	3,717,385	3,608,042	109,343	2.9	692,791	599,912	92,879	13.4	4,410,176	4,207,954	202,222	4.6
1941	3,779,682	3,681,558	98,124	2.6	854,719	743,932	110,787	13.9	4,634,401	4,425,490	208,911	4.7
1942	222,862	215,779	7,083	3.2	184,985	164,325	20,660	11.2	407,847	380,104	27,743	6.8
1943	139	121	18	12.9	24,842	23,420	1,422	5.7	24,981	23,541	1,440	5.8
1944	610	308	302	49.5	116,167	102,295	13,872	11.9	116,777	102,603	14,174	12.1
1945	69,532	68,093	1,439	2.1	291,469	254,039	37,430	12.8	361,001	322,132	38,869	10.7
1946	2,148,699	2,004,649	144,050	6.7	940,851	753,830	187,021	19.9	3,089,550	2,758,479	331,071	10.7
1947	3,558,178	3,297,331	260,847	7.3	1,239,744	988,255	251,489	20.3	4,797,922	4,285,589	512,333	10.7
1948	3,909,270	3,676,093	233,177	6.0	1,376,155	1,173,115	203,040	14.7	5,285,425	4,849,208	436,217	8.3
1949	5,114,269	4,963,325	150,944	2.9	1,129,303	1,002,502	126,801	11.2	6,243,572	5,965,827	277,745	4.4

* Military trucks excluded 1940 through 1945.
Source: Department of Commerce through 1939. Automobile Manufacturers Association for subsequent years.

Motor Vehicle Factory Sales—by Months

From Plants Located in the United States

PASSENGER CARS

	1949	1948	1947	1946	1941	1940	1939	1938	1937	1936	1935
January	326,019	305,081	246,605	56,367	413,012	363,120	281,465	155,505	309,094	297,692	227,554
February	324,547	274,847	267,015	57,784	397,067	339,595	243,000	139,380	296,788	224,211	273,576
March	402,402	349,998	301,525	85,810	416,016	356,351	299,703	174,065	403,879	342,870	359,410
April	436,392	308,071	314,765	132,631	378,906	364,096	273,409	176,078	439,980	416,431	387,158
May	394,703	225,461	284,357	166,942	421,631	327,873	237,870	154,958	425,432	384,921	305,547
June	493,882	312,406	307,124	141,090	423,008	289,228	246,704	136,531	411,414	375,337	294,182
July	483,261	356,764	279,631	209,180	347,907	174,218	150,738	106,841	360,400	371,922	274,344
August	557,370	348,822	261,158	247,261	79,343	47,804	61,407	58,624	311,456	209,351	181,130
September	534,493	301,170	307,942	232,280	166,397	223,593	161,625	65,159	118,671	90,101	56,097
October	487,891	383,755	315,969	283,586	296,554	421,777	251,819	187,494	298,662	190,242	213,310
November	381,951	364,440	305,148	269,081	259,631	406,817	285,252	320,344	295,328	341,065	336,914
December	291,358	378,455	366,939	266,665	180,210	400,913	373,804	326,006	244,385	425,365	343,022
Total	5,114,269	3,909,270	3,558,178	2,149,677	3,779,682	3,717,385	2,866,796	2,000,985	3,915,889	3,669,528	3,252,244

TRUCKS AND BUSES

	1949	1948	1947	1946	1941	1940	1939	1938	1937	1936	1935
January	105,257	100,582	101,091	45,500	86,436	68,356	60,703	53,823	70,109	66,250	62,174
February	102,118	108,155	106,345	35,258	87,824	63,709	60,220	47,151	67,405	63,331	58,655
March	115,716	142,036	119,655	38,193	94,106	68,260	72,243	47,580	90,242	78,052	66,503
April	106,726	130,019	108,634	81,719	85,395	67,764	63,966	43,032	96,170	86,243	65,778
May	86,764	113,077	98,283	76,162	97,115	63,255	59,672	37,101	91,487	75,591	55,560
June	99,758	118,640	93,248	60,812	97,884	56,562	63,034	38,139	85,898	77,631	62,158
July	95,787	117,792	99,561	88,453	97,877	62,187	58,621	34,602	78,568	68,809	57,765
August	100,294	112,531	88,251	98,948	65,383	28,995	38,461	31,870	82,874	61,923	56,270
September	91,687	112,367	112,327	96,515	68,460	44,147	27,132	18,375	52,542	45,064	31,443
October	85,026	108,048	120,032	108,141	81,478	70,447	61,573	22,018	31,214	34,446	58,733
November	73,057	104,382	89,027	102,075	93,128	76,841	66,533	52,069	64,727	53,902	58,145
December	67,113	108,526	103,188	109,054	105,734	84,378	78,338	62,340	81,849	73,345	61,506
Total	1,129,303	1,376,155	1,239,642	940,830	1,060,820	754,901	710,496	488,100	893,085	784,587	694,690

TOTAL CARS, TRUCKS AND BUSES

	1949	1948	1947	1946	1941	1940	1939	1938	1937	1936	1935
January	431,276	405,663	347,696	101,867	499,448	431,476	342,168	209,328	379,603	363,942	289,728
February	426,665	383,002	373,360	93,042	484,891	403,304	303,220	186,531	364,193	287,542	332,231
March	518,118	492,034	421,180	124,003	510,122	424,611	371,946	221,645	394,121	420,922	425,913
April	543,118	438,090	423,399	214,350	464,301	431,860	337,375	219,110	536,150	502,674	452,936
May	481,467	338,538	382,640	243,104	518,746	391,128	297,542	192,059	516,919	460,512	361,107
June	593,640	431,046	400,372	201,902	520,892	345,790	309,738	174,670	497,312	452,968	356,340
July	579,048	474,556	379,192	297,633	445,784	236,405	209,359	141,443	438,968	440,731	332,109
August	657,664	461,353	349,409	346,209	144,726	76,799	99,868	90,494	394,330	271,274	237,400
September	626,180	413,537	420,269	328,795	234,857	267,740	188,757	83,534	171,213	135,165	87,540
October	572,917	491,803	436,001	391,727	378,032	492,224	313,392	209,512	329,876	224,688	272,043
November	455,008	468,222	394,175	371,156	352,759	485,658	351,785	372,413	360,055	394,967	395,059
December	358,471	486,981	470,127	375,719	285,944	485,291	452,142	388,346	326,234	498,710	404,528
Total	6,243,572	5,285,425	4,797,820	3,089,507	4,840,502	4,472,286	3,577,292	2,489,085	4,808,974	4,454,115	3,946,934

Source: Bureau of the Census and Automobile Manufacturers Association. No monthly factory sales are available for war years, 1942 to 1945.

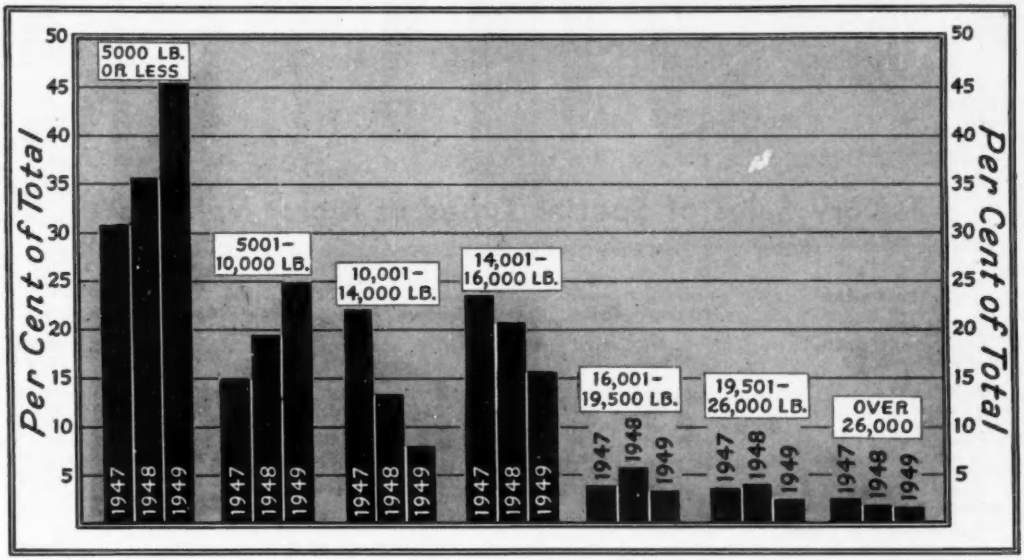
Truck Factory Sales by Gross Vehicle Weights, 1946-1949*

From Plants Located in the United States.

Year	5,000 lbs. and Less	5,001-10,000	10,001-14,000	14,001-16,000	16,001-19,500	19,501-26,000	Over 26,000	Total
1946	330,730	88,235	247,912	200,574	24,162	25,252	13,874	930,739
Per Cent of Total	35.53%	9.48%	26.64%	21.55%	2.60%	2.71%	1.49%	100.00%
1947	375,445	182,490	265,969	285,589	41,606	42,761	26,754	1,220,634
Per Cent of Total	30.76%	14.95%	21.79%	23.40%	3.41%	3.50%	2.19%	100.00%
1948	485,088	267,720	182,500	280,535	76,711	50,023	21,279	1,363,856
Per Cent of Total	35.57%	19.63%	13.38%	20.57%	5.62%	3.67%	1.56%	100.00%
1949	511,738	278,612	83,391	172,009	37,078	23,613	17,351	1,123,792
Per Cent of Total	45.54%	24.79%	7.42%	15.31%	3.30%	2.10%	1.54%	100.00%
Average, 1946-1949	425,750	204,264	194,948	234,677	44,889	35,412	19,815	1,159,755
Per Cent of Total	36.71%	17.61%	16.81%	20.24%	3.87%	3.05%	1.71%	100.00%

* Automobile Manufacturers Association.

71% OF POSTWAR TRUCK SALES WERE UNDER 14,001 Lbs. G.V.W.



Revenue Motor Bus Factory Sales

From Plants Located in the United States

Month	1949	1948	1947	1946	1944	1943	1942	1941	1940
January	658	1,382	1,273	447	231	227	901	430	467
February	418	1,101	1,303	285	245	226	828	486	454
March	545	1,430	1,421	527	336	102	929	662	406
April	514	1,056	1,650	948	352	76	875	603	338
May	564	1,288	1,853	798	367	33	938	701	531
June	632	1,068	1,628	774	293	54	875	609	458
July	439	1,012	1,806	862	381	15	879	650	406
August	444	771	1,765	1,067	470	48	263	627	688
September	298	1,143	1,607	833	563	145	557	748	403
October	322	670	1,667	975	594	162	376	615	685
November	308	545	1,416	1,146	494	190	419	573	591
December	389	824	1,721	1,438	1,463	326	497	952	721
Total	5,511	12,299	19,110	10,091	5,799	1,613	8,337	7,626	6,147

Source: Automobile Manufacturers Association.

Motor Bus Deliveries from U. S. Plants—by Type of Bus*

Does Not Include Non-Integral School Buses

Year	City Coaches			Intercity Coaches			Special Coaches†			Total All Coaches		
	Domestic	Foreign	Total	Domestic	Foreign	Total	Domestic	Foreign	Total	Domestic	Foreign	Total
1946	6,842	699	7,541	2,276	107	2,383	159	7	166	9,277	813	10,090
1947	11,799	1,821	13,620	3,451	500	3,951	1,400	139	1,539	16,650	2,460	19,110
1948	6,971	1,267	8,238	2,558	468	3,026	997	38	1,035	10,526	1,773	12,299
1949	3,402	398	3,800	690	165	855	802	54	856	4,894	617	5,511

* Automobile Manufacturers Association. † Includes Integral School Buses.

1949 Truck Factory Sales by Gross Vehicle Weights, by Months

From Plants Located in the United States.

Gross Vehicle Weights →	5,000 lb. and less	5,001-10,000	10,001-14,000	14,001-16,000	16,001-19,500	19,501-26,000	Over 26,000	Total
DOMESTIC MARKET								
January, 1949	31,918	25,687	8,171	17,451	4,047	2,708	1,290	91,282
February	32,799	25,543	8,155	16,057	2,855	1,839	1,292	88,540
March	39,769	28,082	8,790	17,838	2,364	1,654	1,428	99,925
April	40,568	25,068	7,440	13,909	1,926	1,580	1,307	91,808
May	33,805	19,931	4,779	12,159	2,294	1,327	1,223	75,518
June	43,656	23,572	5,234*	12,031	2,110	1,417	1,155*	88,174
July	41,166	24,358	5,992*	9,857	1,729	1,411	914*	85,427
August	47,312	23,101	5,916*	8,874	1,941	1,654	1,191*	89,989
September	46,349	19,073	4,801	7,403	2,074	1,523	1,264	82,487
October	43,645	17,464	3,808*	6,784	2,115	1,423	1,345*	76,584
November	37,842	13,364	3,371	6,024*	2,232	1,641	1,616*	66,090
December	30,427	12,782	4,512	7,217	2,706	1,593	1,544	60,784
Total, 1949	469,255	256,035	70,969	135,604	28,396	19,780	15,569	997,608
FOREIGN MARKET								
January, 1949	3,086	1,882	1,409	5,698	909	242	91	13,317
February	4,115	2,096	1,319	4,356	865	292	118	13,160
March	4,943	2,482	1,764	4,235	1,126	602	94	15,246
April	5,188	2,041	1,471	4,398	728	422	156	14,404
May	3,409	1,739	867	3,442	748	313	164	10,682
June	3,847	1,751	683	2,393	818	301	159	9,952
July	3,144	1,756	1,247	2,439	862	296	178	9,921
August	3,075	1,667	1,274	2,705	682	238	220	9,861
September	3,559	1,579	756	2,017	422	408	161	8,902
October	3,513	1,363	492	1,856	476	263	167	8,120
November	2,889	1,024	576	1,395	606	245	122	6,659
December	1,916	1,199	562	1,471	440	211	162	5,960
Total, 1949	42,483	20,577	12,422	36,405	8,682	3,833	1,782	126,184

Factory Sales of Special Types of Motor Vehicles*

From Plants Located in the United States.

Type of Vehicle	1949			1948			1947		
	Domestic	Foreign	Total	Domestic	Foreign	Total	Domestic	Foreign	Total
Station Wagons:									
On Passenger Car Chassis	82,439	5,917	88,410	....	......	102,463	....	......	79,638
On Truck Chassis	12,518	1,112	13,630	....	......	7,849	....	......	2,335
Total	94,957	7,083	102,040	102,023	8,289	110,312	70,078	11,895	81,973
Motor Coaches	4,894	617	5,511	10,526	1,773	12,299	16,650	2,460	19,110
School Bus Chassis	9,591	4,305	13,896	15,387	8,368	23,755	20,241	10,190	30,431
Trucks with Cab over Engine	11,989	1,336	13,325	28,692	2,355	31,047	29,175	3,428	32,603
Trucks with Diesel Engines	4,885	1,162	6,047	3,684	2,014	5,698	2,605	3,604	6,209
Multi-Stop Trucks	18,796	683	19,479	21,198	182	21,380	15,317	559	15,876
Trucks with 6 Wheels, 3 Axles	3,671	451	4,122	......	......	......	......	......	......
Ambulances and Funeral Vehicles	n.a.	n.a.	2,853	......	......	4,727	......	......	3,746

* Automobile Manufacturers Association.

G.M. Car and Truck Production*

G. M. Divisions	1949	1948
Chevrolet		
Passenger Cars	1,109,958	775,990
Trucks	383,543	389,690
Pontiac		
Passenger Cars	333,955	253,469
Trucks	2,490	......
Oldsmobile	282,885	194,755
Buick	398,482	275,503
Cadillac	81,545	66,209
G. M. C. Truck and Coach		
Trucks	83,840	92,677
Coaches	2,176	5,362
Total—U. S. Production	2,678,874	2,053,655
Passenger Cars	2,206,825	1,565,926
Trucks and Buses	472,049	487,729
Total—G. M. of Canada	92,320	93,742
Passenger Cars	62,634	65,245
Trucks	29,686	28,497
Total—G. M. Production	2,771,194	2,147,397

* As reported by General Motors Corporation.

Tire and Tube Shipments*

	1949	1948
PASSENGER CAR CASINGS		
Original Equipment	28,125,288	21,589,040
Replacement	36,431,565	41,295,434
Export	509,468	655,686
Total Shipments	65,066,321	63,540,160
TRUCK AND BUS CASINGS		
Original Equipment	3,462,991	5,256,413
Replacement	7,042,414	7,852,877
Export	958,001	1,131,812
Total Shipments	11,463,406	14,241,102
TOTAL CASINGS		
Original Equipment	31,588,279	26,845,453
Replacement	43,473,979	49,148,311
Export	1,467,469	1,787,498
Total Shipments	76,529,727	77,781,262
TOTAL TUBES		
Original Equipment	31,535,476	26,832,965
Replacement	31,922,659	40,547,533
Export	890,719	1,118,756

* Rubber Manufacturers Association.

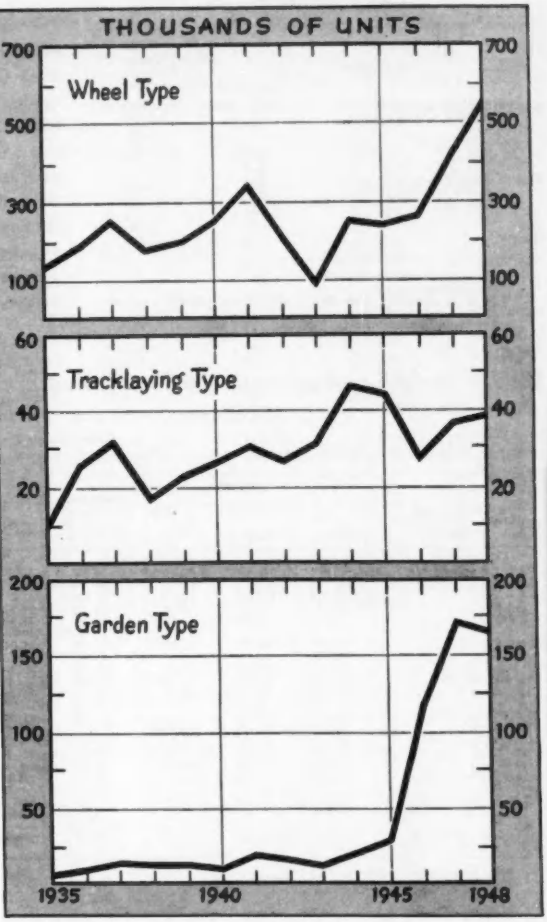
FARM and NON-FARM TRACTOR SHIPMENTS

Tractor Factory Sales*

In Units and Their Wholesale Value

Year	Number	Value at Factory	Average Value per Tractor
WHEEL TYPE			
1948	529,213	$496,428,801	$938
1947	428,665	349,334,523	815
1946	255,338	192,272,124	753
1945	243,692	168,895,732	693
1944	249,955	170,112,908	680
1943	103,867	63,216,811	609
1942	185,677	111,618,126	601
1941	324,062	191,128,659	590
1940	249,921	137,178,844	549
1939	185,321	111,178,377	600
1938	175,473	118,060,604	673
TRACKLAYING TYPE			
1948	39,433	$161,928,644	$4,106
1947	37,534	134,329,871	3,579
1946	26,265	82,993,679	3,160
1945	43,998	212,007,480	4,818
1944	45,187	260,582,975	5,766
1943	30,652	142,194,327	4,639
1942	28,644	100,369,913	3,504
1941	29,744	80,063,902	2,692
1940	25,110	60,285,160	2,400
1939	21,104	45,803,981	2,170
1938	19,801	40,221,557	2,031
GARDEN TYPE			
1948	167,411	$29,511,208	$176
1947	172,252	33,151,065	192
1946	115,241	23,925,724	208
1945	27,962	3,592,299	128
1944	16,852	2,288,853	136
1943	9,610	1,411,196	147
1942	12,983	1,862,171	143
1941	16,896	2,197,382	130
1940	9,399	1,312,264	140
1939	9,599	1,423,818	148
1938	9,633	1,332,014	138

* Industry Division, Bureau of the Census.



Tractor Factory Sales by Hp Ratings

In Units and Their Value

	1948		1947		1946	
	Number	Value	Number	Value	Number	Value
Wheel Type						
All Purpose						
Under 25 Belt Hp.	218,018	$154,844,069	275,813	$190,067,616	170,858	$110,669,956
25–34 Belt Hp.	206,714	199,684,158	84,333	80,132,986	41,589	38,434,451
35 Belt Hp. and over	18,489	25,449,243	5,911	8,659,882	5,740	6,768,236
Other						
Under 25 Belt Hp.	19,324	16,162,813	16,446	12,210,675	16,293	11,215,620
25–34 Belt Hp.	21,430	26,492,175	15,981	15,802,292	8,080	7,497,156
35 Belt Hp. and over	45,238	73,796,343	30,181	42,461,072	12,778	17,686,705
Total—Wheel Type	529,213	$496,428,801	428,665	$349,334,523	255,338	$192,272,124
Tracklaying Type						
Under 35 Drawbar Hp.	12,323	23,414,184	12,011	20,607,599	8,197	12,448,885
35–49 Drawbar Hp.	11,849	40,324,340	9,597	27,912,164	6,918	17,204,727
50–69 Drawbar Hp.	7,049	34,154,780	7,214	29,923,535	4,703	17,404,146
70 Drawbar Hp. and over	8,212	64,035,340	8,712	55,886,573	6,447	35,875,921
Total—Tracklaying Type	39,433	$161,928,644	37,534	$134,329,871	26,265	$ 82,933,679
Total—Wheel and Tracklaying Types	568,646	$658,357,445	466,199	$483,664,394	281,603	$275,205,803

Source of data:—Industry Division, Bureau of the Census

1947 Internal-Combustion Engine Production*

PRODUCT	Total Number of Engines Produced
Gasoline and other carburetor (1)	8,510,486
Automotive (Car, truck and bus)	5,766,578
Aircraft(2)	18,934
Outboard	584,458
All Other	2,140,516
Diesel and semi-Diesel	115,363
Automotive (Car, truck and bus)	15,180
All Other	100,183
Gas	3,622
Other(3)	55,944

(1)—Includes kerosene and distillate.
(2)—Conventional type only.
(3)—Consists entirely of carbon dioxide model aircraft engines of special design and dual fuel type engines.
*—1947 Census of Manufacturers.

Presented on this page are revised data on the production of Internal-Combustion Engines during 1947 as reported by the 1947 Census of Manufacturers. As this is the first and only report available which shows the combined totals of those vehicle manufacturers who make their own engines and the exclusive engine builders, it was deemed advisable to present for your use in detail all available data concerning the 1947 engine production. The table on the left summarizes total engine production while the two tables below give details as to number of units produced and their values of both gasoline and Diesel engines for all engines exclusive of automobile, aircraft and outboard.

1947 Internal-Combustion Engine Production (Except Automobile, Aircraft and Outboard)*

In Units and Their Value—By Horsepower Classifications

(Dollar Values in Thousands)

GASOLINE AND OTHER CARBURETOR ENGINES	Total Production	Shipments to Other Companies		Production for Use in Products of Same Company
	Units	Units	Value at Plant	
1.9 hp and under	526,384	490,976	$ 13,245	35,388
2.0-2.9 hp	487,710	461,232	21,117	26,478
3.0-4.9 hp	205,210	157,995	11,934	47,215
5.0-5.9 hp	56,561	38,341	2,732	18,220
6.0-6.9 hp	39,423	8,962	749	30,461
7.0-8.9 hp	43,040	42,034	2,986	1,006
9.0-10.9 hp	48,314	34,477	4,479	13,837
11.0-20.9 hp	144,918	90,419	13,501	54,499
21.0-30.9 hp	230,332	94,028	16,432	136,304
31.0-35.9 hp	30,117	22,332	5,105	7,785
36.0-40.9 hp	149,077	14,022	3,022	135,055
41.0-50.9 hp	36,967	25,446	7,406	11,521
51.0-60.9 hp	46,107	33,147	8,863	12,960
61.0-70.9 hp	26,887	22,058	5,749	4,829
71.0-90.9 hp	27,176	24,224	9,154	2,952
91.0-100.9 hp	13,473	8,411	4,120	5,062
101.0-150.9 hp	25,961	24,606	15,246	1,355
151.0 and over	2,879	2,622	8,276	257
Total—Gasoline Engines	2,140,516	1,595,332	$154,118	545,184

DIESEL AND SEMI-DIESEL ENGINES	Total Production	Shipments to Other Companies		Production for Use in Products of Same Company
	Units	Units	Value at Plant	
5.9 hp and under		1,966	$ 533	
6.0-10.9 hp	14,822	5,078	2,712	831
11.0-20.9 hp		2,981	2,073	
21.0-30.9 hp		3,926	3,621	
31.0-50.9 hp	12,675	4,138	4,414	8,537
51.0-70.9 hp	21,378	10,741	11,440	10,637
71.0-100.9 hp	21,772	12,656	18,171	9,116
101.0-150.9 hp	18,598	13,496	32,051	5,102
151.0-200.9 hp	6,028	5,014	17,893	1,014
201.0-400.9 hp	2,048	1,981	15,559	67
401.0-500.9 hp	471	300	7,357	35
501.0-600.9 hp		136	4,895	
601.0-700.9 hp	473	65	2,454	242
701.0-800.9 hp		166	5,065	
801.0-900.9 hp	79	79	5,447	......
901.0-1000.9 hp	666	70	3,823	596
1001.0-1500.9 hp	1,173	185	9,940	888
1501.0 hp and over		100	9,521	
Total—Diesel Engines	100,183	63,058	$156,969	37,125

*—1947 Census of Manufacturers.

1947 Internal-Combustion Engine Production (Except Automobile, Aircraft and Outboard)*

In Units and Their Value—By Total Displacement

(Dollar Values in Thousands)

GASOLINE AND OTHER CARBURETOR ENGINES	Total Production	Shipments to Other Companies		Production for Use in Products of Same Company
	Units	Units	Value at Plant	
3.9 cu. in. and under	32,085	32,086	$1,021	......
4.0-5.9 cu. in.	491,487	453,988	13,853	37,499
6.0-8.9 cu. in.	408,900	396,777	15,064	12,123
11.0-20.9 cu. in.	256,298	173,964	12,135	82,334
21.0-30.9 cu. in.	147,664	129,804	10,355	17,860
31.0-40.9 cu. in.	30,996	15,518	2,070	15,478
41.0-50.9 cu. in.	30,659	29,424	3,491	1,235
51.0-75.9 cu. in.	65,034	39,389	5,142	25,645
76.0-100.9 cu. in.	66,606	56,324	8,733	10,282
101.0-150.9 cu. in.	251,125	89,616	15,474	161,509
151.0-175.9 cu. in.	80,197	33,413	7,168	46,784
176.0-200.9 cu. in.	48,859	6,708	1,865	42,151
201.0-225.9 cu. in.	37,047	29,604	7,968	7,443
226.0-300.9 cu. in.	103,688	61,869	18,673	41,819
301.0-4.00.9 cu. in.	53,134	29,427	12,096	23,707
401.0-500.9 cu. in.	20,450	8,923	5,418	11,527
501.0 cu. in. and over	16,277	8,489	13,593	7,788
Total—Gasoline Engines	2,140,516	1,596,332	$154,118	545,184

DIESEL AND SEMI-DIESEL ENGINES	Total Production	Shipments to Other Companies		Production for Use in Products of Same Company
	Units	Units	Value at Plant	
16.0-50.9 cu. in.	8,391	5,317	$2,305	717
51.0-100.9 cu. in.		2,357	1,472	
101.0-150.9 cu. in.	10,193	6,412	5,281	1,183
151.0-200.9 cu. in.		2,598	1,923	
201.0-250.9 cu. in.	17,444	9,324	9,711	8,120
251.0-300.9 cu. in.	7,685	5,760	8,314	1,925
301.0-400.9 cu. in.	27,938	5,294	6,642	13,588
401.0-500.9 cu. in.		9,056	15,370	
501.0-600.9 cu. in.		1,272	2,492	
601.0-800.9 cu. in.	17,185	5,060	11,697	7,344
801.0-1000.9 cu. in.		3,509	11,313	
1001.0-1500.9 cu. in.	7,622	3,629	13,399	2,680
1501.0-2000.9 cu. in.		1,313	8,287	
2001.0-3000.9 cu. in.	1,066	595	4,422	44
3001.0-5000.9 cu. in.		427	6,663	
5001.0-10,000.9 cu. in.	1,865	414	10,875	1,451
10,001.0 cu. in. and over	794	721	36,803	73
Total—Diesel Engines	100,183	63,058	$156,968	37,125

*—1947 Census of Manufacturers.

Motor Vehicle Production in Canada*

In Units and Their Value

Year	PASSENGER CARS Number of Units†	PASSENGER CARS Wholesale Value	PASSENGER CARS Average Wholesale Value	TRUCKS AND BUSES Number of Units†	TRUCKS AND BUSES Wholesale Value	TRUCKS AND BUSES Average Wholesale Value	TOTAL Number of Units	TOTAL Wholesale Value
1925	135,573	$86,158,773	$635	26,397	$12,234,486	$463	161,970	$98,393,259
1926	166,887	106,000,203	635	37,840	16,629,334	439	204,727	122,629,537
1927	146,421	100,962,211	689	32,633	14,942,017	458	179,054	115,904,228
1928	197,848	127,263,877	643	44,206	21,913,122	496	242,054	149,176,999
1929	203,307	134,023,280	659	59,318	29,474,395	497	262,625	163,497,675
1930	121,337	75,253,581	620	32,035	16,513,225	515	153,372	91,766,806
1931	65,072	42,634,173	655	17,487	10,330,763	591	82,559	52,964,936
1932	50,694	32,490,129	641	10,095	6,070,667	601	60,789	38,560,796
1933	53,849	32,568,268	605	12,003	6,062,195	505	65,852	38,630,463
1934	92,647	57,260,156	618	24,205	12,770,318	528	116,852	70,030,474
1935	135,562	79,209,276	584	37,315	19,803,771	531	172,877	99,013,047
1936	128,369	76,814,258	598	33,790	19,140,946	566	162,159	95,955,204
1937	153,046	93,368,282	610	54,417	30,389,011	558	207,463	123,757,293
1938	123,761	81,661,687	660	42,325	26,497,038	626	166,086	108,158,725
1939	108,369	71,101,204	656	47,057	28,072,712	597	155,426	99,173,916
1940	109,911	83,544,445	760	113,102	91,191,516	806	223,013	174,735,961
1941	96,603	81,167,694	840	173,588	163,414,253	941	270,191	244,581,947
1942	12,236	10,305,013	842	216,057	229,103,128	1,060	228,293	239,408,741
1943	....	....	.....	178,064	222,393,092	1,249	178,064	222,393,092
1944	....	....	.....	158,038	213,259,582	1,349	158,038	213,259,582
1945	1,868	1,638,118	877	130,777	167,103,012	1,278	132,645	168,741,130
1946	91,871	82,847,330	902	79,657	81,204,338	1,019	171,528	164,051,668
1947	167,257	182,161,183	1,089	90,758	116,357,486	1,282	258,015	298,518,669
1948	166,819	210,799,512	1,264	96,941	137,228,722	1,415	263,760	348,028,234
1949	195,741	....	.....	99,962	....	.....	295,703	....

† Production figures include all wheeled vehicles for military use. Universal carriers and scout cars are not included.
* Canadian Automobile Chamber of Commerce.

Canadian Motor Vehicle Production—by Months*

	1949	1948	1947	1946	1945	1944	1943	1942
January	14,259	16,715	18,700	8,495	13,745	13,072	16,341	22,644
February	17,354	16,382	20,331	7,484	13,090	13,930	15,998	20,181
March	25,900	27,112	22,491	11,373	14,912	14,625	17,687	20,188
April	27,185	24,243	21,891	16,830	14,351	11,061	15,500	19,549
May	27,450	21,368	21,665	20,022	15,045	12,303	15,689	17,141
June	30,943	23,362	21,137	15,585	14,532	14,317	15,164	21,050
July	25,839	15,106	21,907	17,221	11,093	12,132	11,598	18,672
August	20,784	16,959	15,659	12,293	13,376	13,729	15,046	18,042
September	31,248	23,775	24,205	11,543	8,484	12,511	13,122	18,094
October	28,574	25,057	25,479	14,951	6,596	13,230	13,827	19,477
November	20,008	26,794	23,240	19,105	1,575	14,047	14,186	15,051
December	26,159	26,887	21,310	16,626	5,846	12,451	13,906	18,204
Total	295,703	263,760	258,015	171,528	132,645	158,038	178,064	228,293

* Canadian Automobile Chamber of Commerce.

1948 Canadian Motor Vehicle Registrations—by Provinces*

Province	Passenger Cars	Motor Trucks	Motor Buses	Other Motor Vehicles†	Total Motor Vehicles	Motor-cycles	Trailers
P. E. Island	8,297	2,588	27	330	11,242	48	610
Nova Scotia	50,198	22,656	520	1,829	75,203	1,016	2,472
New Brunswick	40,795	16,984	399	3,057	61,235	1,131	3,061
Quebec	237,410	81,478	2,616	3,008	324,512	11,441	16,733
Ontario	698,384	160,587	3,201	1,549	863,721	11,212	69,425
Manitoba	91,992	32,480	178	1,808	126,458	1,542	9,812
Saskatchewan	109,718	56,285	126	207	166,336	1,179	9,685
Alberta	115,350	53,097	392	3,297	172,136	1,814	496
British Columbia	143,675	52,986	‡	929	197,590	4,536	10,117
Yukon and N. W. T.§	1,140	700	5	70	1,915	15	5
Total—Canada	1,496,959	479,841	7,464	16,084	2,000,348	33,934	122,416
Newfoundland	7,342	3,934	275	......	11,551	225	....
Total—Canada and Newfoundland	1,504,301	483,775	7,739	16,084	2,011,899	34,159	122,416

* Canadian Automobile Chamber of Commerce. ‡ Included with trucks. § Estimated.
† Includes road tractors, ambulances, fire trucks, hearses, government and municipal motor vehicles.

New Registrations

CARS AND TRUCKS

New Passenger Car Registrations by Makes, by Years*

Make of Car	1949 Units	1949 % of Total	1948 Units	1948 % of Total	1947 Units	1947 % of Total	1946 Units	1946 % of Total
Chrysler	130,516	2.70	105,315	3.02	93,871	2.96	65,532	3.61
De Soto	103,311	2.14	82,454	2.36	72,966	2.30	54,420	2.99
Dodge	273,530	5.65	213,923	6.13	209,552	6.62	135,488	7.46
Plymouth	527,915	10.91	347,174	9.94	313,118	9.89	211,800	11.68
Total—Chrysler Corp.	1,035,272	21.40	748,866	21.45	689,507	21.77	467,240	25.74
Ford	806,766	16.67	486,888	13.95	532,646	16.82	326,822	18.01
Lincoln	37,691	.78	32,638	.93	24,081	.76	10,798	.59
Mercury	186,629	3.86	137,512	3.94	111,198	3.51	61,187	3.37
Total—Ford Motor Co.	1,031,086	21.31	657,038	18.82	667,925	21.09	398,807	21.97
Buick	372,425	7.70	244,762	7.01	246,115	7.77	126,322	6.96
Cadillac	80,880	1.67	59,379	1.70	53,379	1.69	23,666	1.30
Chevrolet	1,031,466	21.32	709,609	20.33	640,709	20.23	329,601	18.16
Oldsmobile	269,351	5.57	175,531	5.03	180,078	5.68	93,094	5.13
Pontiac	321,033	6.63	228,939	6.56	206,411	6.52	113,109	6.23
Total—General Motors Corp.	2,075,155	42.89	1,418,220	40.63	1,326,692	41.89	685,792	37.78
Frazer	15,827	.23	57,994	1.66	51,158	1.62	1,873	.10
Kaiser	57,995	1.20	108,367	3.10	55,571	1.74	3,501	.19
Total—Kaiser-Frazer Corp.	73,822	1.53	166,361	4.76	106,729	3.37	5,374	.29
Crosley	10,175	.21	25,400	.73	15,934	.50	2,868	.16
Hudson	137,907	2.85	109,497	3.14	83,344	2.63	72,484	3.99
Nash	135,328	2.80	104,156	2.98	102,808	3.25	85,169	4.69
Packard	97,771	2.02	77,843	2.23	47,875	1.51	36,435	2.01
Studebaker	199,460	4.12	143,120	4.10	102,123	3.22	58,051	3.20
Willys	28,576	.59	21,408	.61	23,400	.74	2,329	.13
All Others	5,061	.10	7,210	.21	894	.03	647	.04
Total—Independents	696,829	14.22	666,828	19.10	483,107	15.25	263,357	14.51
British Austin	3,642	.08	8,610	.25	....	....	....	....
British Ford	5,087	.10	3,223	.09	....	....	....	....
Total—All Makes	4,838,342	100.00	3,490,952	100.00	3,167,231	100.00	1,815,196	100.00

* Data from R. L. Polk & Co.

New Truck Registrations by Makes, by Years*

Make of Truck	1949 Units	1949 % of Total	1948 Units	1948 % of Total	1947 Units	1947 % of Total	1946 Units	1946 % of Total
Autocar	1,655	.17	2,770	.27	4,334	.49	4,755	.76
Brockway	1,626	.17	2,958	.29	4,255	.48	3,683	.59
Chevrolet	345,519	35.93	302,219	29.19	235,803	26.82	171,618	27.44
Crosley	871	.09	2,411	.23	....	....	....	....
Diamond T	5,172	.54	10,657	1.03	10,475	1.19	5,093	.81
Divco	3,577	.37	5,618	.54	4,893	.56	3,734	.60
Dodge	116,956	12.16	114,431	11.05	126,736	14.42	96,490	15.43
Federal	1,225	.13	4,026	.39	6,020	.68	4,557	.73
Ford	202,179	21.02	225,729	21.81	186,414	21.20	131,469	21.03
F.W.D.	337	.04	811	.08	1,195	.14	585	.09
G.M.C.	80,407	8.36	74,857	7.23	49,187	5.59	25,645	4.10
Hudson	....	....	117	.01	2,534	.29	2,543	.41
International	91,164	9.48	125,203	12.09	113,151	12.87	78,392	12.54
Kenworth	392	.04	478	.05	487	.06	....	....
Mack	6,866	.71	9,795	.95	10,917	1.24	4,687	.75
Oshkosh	†	....	173	.02	245	.03	....	....
Reo	4,003	.41	10,773	1.04	12,911	1.47	10,489	1.68
Sterling	229	.02	411	.04	576	.07	510	.08
Studebaker	55,099	5.73	50,657	4.89	41,861	4.76	25,360	4.06
Ward La France	†	....	271	.03	509	.06	....	....
White	8,318	.86	11,603	1.12	13,086	1.49	10,117	1.62
Willys—Jeep	14,472	1.50	48,644	4.70	47,612	5.42	42,135	6.74
Willys—Truck	18,293	1.90	27,840	2.69	2,207	.25	....	....
All Others	3,601	.37	2,722	.26	3,724	.42	3,387	.54
Total	961,961	100.00	1,035,174	100.00	879,132	100.00	625,249	100.00

* Data from R. L. Polk & Co. † Included with All Others.

New Car Registrations by Months, by Years*

Months	1949 Units	1949 % of Total	1948 Units	1948 % of Total	1947 Units	1947 % of Total	1946 Units	1946 % of Total	1941 Units	1941 % of Total
January	273,161	5.64	274,979	7.88	209,063	6.60	January	......	297,558	7.97
February	258,218	5.34	249,781	7.16	214,333	6.77		......	299,701	8.03
March	360,594	7.45	311,660	8.93	264,714	8.36	through	......	419,396	11.24
April	390,932	8.08	330,555	9.47	290,226	9.16	June	......	488,460	13.09
May	446,251	9.22	255,638	7.32	286,719	9.05		......	514,478	13.79
June	432,470	8.94	246,926	7.07	269,863	8.52	493,299	27.18	443,470	11.89
July	448,477	9.27	291,206	8.34	263,167	8.31	172,961	9.53	391,798	10.50
August	478,556	9.89	317,768	9.10	264,866	8.36	199,316	10.98	246,585	6.61
September	459,647	9.50	296,339	8.49	251,665	7.95	219,281	12.08	125,293	3.36
October	465,765	9.63	291,442	8.35	281,428	8.89	225,180	12.41	165,485	4.43
November	409,702	8.47	313,230	8.97	258,934	8.17	230,424	12.69	164,747	4.42
December	414,579	8.57	311,419	8.92	312,263	9.86	274,735	15.13	174,180	4.67
Total	4,838,342	100.00	3,490,952	100.00	3,167,231	100.00	1,815,196	100.00	3,731,166	100.00

* Data from R. L. Polk & Co.

New Car and Truck Registrations—by Years*

Year	New Passenger Cars	New Commercial Vehicles	Total New Cars and Trucks	Year	New Passenger Cars	New Commercial Vehicles	Total New Cars and Trucks
1928	3,139,579	341,123	3,480,702	1939	2,653,377	486,748	3,140,125
1929	3,880,206	527,057	4,407,263	1940	3,415,905	559,150	3,975,055
1930	2,625,979	410,699	3,036,678	1941	3,731,166	640,697	4,371,863
1931	1,908,141	313,884	2,222,025	1942	304,691	77,422	382,113
1932	1,096,399	180,413	1,276,812	1943	205,805	62,469	268,274
1933	1,493,794	245,869	1,739,663	1944	65,730	121,269	186,999
1934	1,888,557	403,886	2,292,443	1945	71,877	350,932	422,809
1935	2,743,908	510,683	3,254,591	1946	1,815,196	625,249	2,440,445
1936	3,404,497	611,644	4,016,141	1947	3,167,231	879,132	4,046,363
1937	3,483,752	618,249	4,102,001	1948	3,490,952	1,035,174	4,526,126
1938	1,891,021	365,349	2,256,370	1949	4,838,342	961,961	5,800,303

* Sources: 1928 through February, 1942 and 1946 and later years compiled by R. L. Polk & Co. Passenger car data from March, 1942 through July, 1945 are from OPA and represent new car releases to civilian users. Commercial car data from April, 1942 through July, 1945 are from WPB and ODT and represent certificates of transfer issued to civilian users, excluding government exemption permits.

New Motor Vehicle Registrations, by States*

STATE	NEW PASSENGER CARS 1949	1948	1947	NEW TRUCKS 1949	1948	1947	TOTAL NEW VEHICLES 1949	1948	1947
Alabama	58,273	40,432	35,508	21,674	22,309	17,615	79,947	62,741	53,123
Arizona	20,995	12,994	10,655	5,744	6,042	4,811	26,739	19,036	15,466
Arkansas	34,030	21,319	19,786	21,969	18,289	14,563	55,999	39,608	34,349
California	389,544	272,209	253,341	55,036	64,009	58,653	444,580	336,218	311,994
Colorado	42,770	27,942	25,958	12,569	12,285	9,490	55,339	40,227	35,448
Connecticut	66,278	50,745	48,782	7,212	9,903	8,665	73,490	60,648	57,447
Delaware	14,655	9,996	8,846	2,867	3,238	2,733	17,522	13,284	11,579
Dist. of Col.	29,209	25,270	23,186	2,954	3,987	3,299	32,163	29,257	26,485
Florida	84,238	53,746	49,009	19,769	19,557	18,383	104,007	73,303	67,392
Georgia	80,886	59,703	53,432	27,354	28,207	20,499	108,240	87,910	73,931
Idaho	23,211	14,554	12,093	8,091	8,258	6,110	31,302	22,812	18,203
Illinois	345,156	241,231	218,536	51,130	52,646	45,457	396,286	293,877	263,993
Indiana	148,827	101,128	97,223	26,062	27,196	25,755	174,889	128,324	122,978
Iowa	102,183	68,947	54,837	25,823	26,358	20,835	128,006	95,305	75,672
Kansas	74,760	48,970	40,864	22,234	22,246	16,957	96,994	71,216	57,821
Kentucky	61,597	43,082	38,144	21,116	22,170	17,193	82,713	65,252	55,337
Louisiana	65,820	44,925	35,525	18,684	16,061	12,653	84,504	60,986	48,178
Maine	23,140	17,298	15,690	6,032	7,497	7,683	29,172	24,795	23,373
Maryland	69,985	52,762	48,034	9,954	13,267	12,412	79,939	66,029	60,446
Massachusetts	133,288	102,244	97,447	12,698	17,878	17,695	145,986	120,122	115,142
Michigan	321,421	250,853	246,973	35,257	39,568	33,553	356,678	290,421	280,526
Minnesota	107,435	76,781	60,567	22,555	23,996	17,108	129,990	100,777	77,675
Mississippi	40,163	28,242	26,382	18,663	18,093	15,264	58,826	46,335	41,646
Missouri	131,269	93,266	84,905	31,915	31,611	27,631	163,184	124,877	112,536
Montana	23,681	18,014	15,300	9,714	10,453	8,243	33,395	28,467	23,543
Nebraska	51,105	35,234	28,654	17,030	16,664	12,082	68,135	51,898	40,736
Nevada	6,607	5,028	4,597	1,789	1,654	1,373	8,396	6,682	5,970
New Hampshire	15,162	10,539	10,790	3,147	3,838	3,749	18,309	14,377	14,539
New Jersey	165,842	116,945	106,585	23,158	25,219	22,604	189,000	142,164	129,189
New Mexico	17,571	10,897	8,969	7,446	6,082	4,952	25,017	16,979	13,921
New York	415,634	338,254	308,710	47,784	62,446	56,259	463,418	400,700	364,969
North Carolina	93,514	59,584	54,756	27,551	28,054	24,445	121,065	87,638	79,201
North Dakota	22,905	13,359	11,894	9,600	8,283	6,151	32,505	21,642	18,045
Ohio	302,830	220,248	215,359	39,886	47,755	45,336	342,716	268,003	260,695
Oklahoma	65,563	44,942	39,119	23,677	22,544	18,392	89,240	67,486	57,511
Oregon	55,212	39,655	34,121	12,865	15,560	12,184	68,077	55,215	46,305
Pennsylvania	336,446	257,764	228,733	46,306	60,271	52,586	382,752	318,035	281,319
Rhode Island	24,463	19,816	18,261	3,479	4,600	3,495	27,942	24,416	21,756
South Carolina	45,543	30,599	28,705	12,148	12,536	11,194	57,691	43,135	39,899
South Dakota	22,215	14,338	10,808	8,074	7,872	5,549	30,289	22,210	16,357
Tennessee	78,850	60,141	59,732	26,682	26,756	23,206	105,532	86,897	82,938
Texas	243,837	168,379	139,780	71,650	67,737	55,182	315,487	236,116	194,962
Utah	21,366	13,874	12,278	5,756	5,968	4,612	27,122	19,842	16,890
Vermont	13,355	8,991	8,164	3,458	4,294	3,946	16,813	13,285	12,110
Virginia	104,106	73,515	67,435	21,648	23,530	22,555	125,754	97,045	89,990
Washington	74,241	54,109	47,711	14,048	18,054	13,780	88,289	72,163	61,491
West Virginia	36,293	25,098	22,882	10,451	12,082	9,019	46,744	37,180	31,901
Wisconsin	120,845	84,224	71,116	22,596	23,398	19,729	143,441	107,622	90,845
Wyoming	12,023	8,766	7,049	4,567	4,853	3,492	16,590	13,619	10,541
Total	4,838,342	3,490,952	3,167,231	961,961	1,035,174	879,132	5,800,303	4,526,126	4,046,363

* Data from R. L. Polk & Co.

73% of 1949 New Truck Sales Under 14000 G.V.W.

New Truck Registrations by Makes, by G.V.W.—1949 and 1948

Make	Year	GROSS VEHICLE WEIGHTS 5,000 lb. or less	5,001-10,000	10,001-14,000	14,001-16,000	16,001-19,500	19,501-26,000	Over 26,000	Total
AUTOCAR	1949	......	......	......	......	......	......	1,655	1,655
	1948	......	......	......	......	......	......	2,770	2,770
BROCKWAY	1949	......	......	......	166	128	631	701	1,626
	1948	......	......	......	370	239	1,606	743	2,958
CHEVROLET	1949	179,489	89,622	26,890	49,518	......	......	......	345,519
	1948	124,669	72,143	32,651	72,756	......	......	......	302,219
CROSLEY	1949	871	......	......	......	......	......	......	871
	1948	2,411	......	......	......	......	......	......	2,411
DIAMOND T	1949	......	1,025	1,507	1,217	521	553	349	5,172
	1948	......	1,115	3,779	3,530	1,126	704	403	10,657
DIVCO	1949	......	3,168	409	......	......	......	......	3,577
	1948	......	4,678	940	......	......	......	......	5,618
DODGE	1949	52,866	32,398	50	20,945	9,482	1,212	3	116,956
	1948	42,097	28,710	978	29,777	11,377	1,492	......	114,431
FEDERAL	1949	......	......	60	467	266	357	75	1,225
	1948	......	......	625	1,981	396	821	203	4,026
FORD	1949	99,044	35,909	30,387	25,901	6,795	4,143	......	202,179
	1948	79,616	50,287	51,140	31,047	10,717	2,922	......	225,729
F. W. D.	1949	......	......	......	......	27	227	83	337
	1948	......	......	......	......	64	609	138	811
G. M. C.	1949	34,431	18,616	8,966	8,375	5,245	2,048	2,726	80,407
	1948	20,962	14,316	15,339	9,522	8,507	3,175	3,036	74,857
INTERNATIONAL	1949	20,603	25,647	575	26,100	9,540	7,079	1,620	91,164
	1948	25,000	29,306	30,749	13,078	13,474	10,207	3,389	125,203
KENWORTH	1949	......	......	......	......	......	......	392	392
	1948	......	......	......	......	......	......	478	478
MACK	1949	......	......	......	654	741	1,826	3,645	6,866
	1948	......	......	......	960	1,274	4,202	3,359	9,795
PONTIAC	1949	775	......	......	......	......	......	......	775
	1948	......	......	......	......	......	......	......	....
REO	1949	......	......	......	2,281	1,304	327	91	4,003
	1948	......	......	3,953	4,684	1,404	246	486	10,773
STERLING	1949	......	......	......	......	......	16	213	229
	1948	......	......	......	......	......	14	397	411
STUDEBAKER	1949	25,159	14,788	9,279	5,873	......	......	......	55,099
	1948	18,651	10,979	16,638	4,389	......	......	......	50,657
WHITE	1949	......	......	......	543	1,305	5,173	1,297	8,318
	1948	......	......	......	1,005	423	8,701	1,474	11,603
WILLYS-JEEP	1949	14,472	......	......	......	......	......	......	14,472
	1948	48,644	......	......	......	......	......	......	48,644
WILLYS-TRUCK	1949	9,284	9,009	......	......	......	......	......	18,293
	1948	16,766	11,074	......	......	......	......	......	27,840
ALL OTHERS	1949	1,322	111	259	24	222	239	649	2,826
	1948	858	457	162	3	263	408	1,132	3,283
TOTAL	1949	438,316	230,293	78,382	142,064	35,576	23,831	13,499	961,961
	1948	379,674	223,065	156,954	173,102	49,264	35,107	18,008	1,035,174
	1947	278,251	153,643	220,801	152,549	25,329	29,076	19,483	879,132
	1946	243,806	61,092	183,774	87,577	12,759	19,409	16,832	652,249
PER CENT OF TOTAL	1949	45.56%	23.94%	8.15%	14.77%	3.70%	2.48%	1.40%	100%
	1948	36.68%	21.55%	15.16%	16.72%	4.76%	3.39%	1.74%	100%
	1947	31.65%	17.48%	25.12%	17.35%	2.88%	3.30%	2.22%	100%
	1946	38.99%	9.77%	29.39%	14.01%	2.04%	3.10%	2.70%	100%

*—Based on data from R. L. Polk & Co.

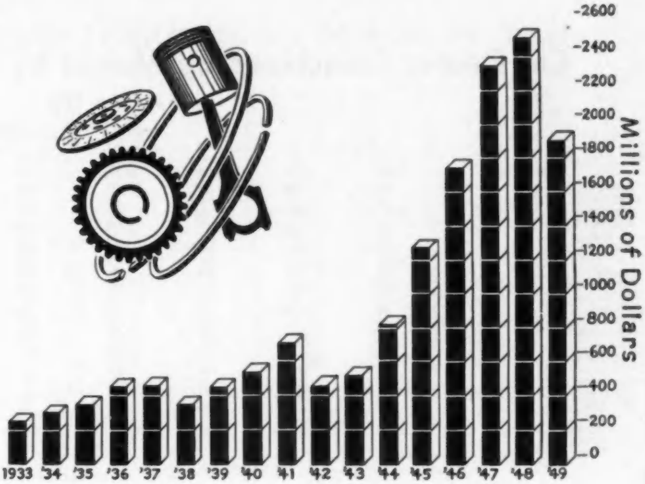
Sales of Replacement Parts and Accessories

Wholesale Value of Repair Parts and Accessories Sales, 1934-1949

Year	Wholesale Value
1933	$234,461,000
1934	304,642,000
1935	378,323,000
1936	448,527,000
1937	464,619,000
1938	348,068,000
1939	454,673,000
1940	553,004,000
1941	718,212,000
1942	471,957,000
1943	527,710,000
1944	816,724,000
1945	1,284,926,000
1946	1,752,918,000
1947	2,353,523,000
1948	2,552,871,760
1949*	1,912,000,000

* Partly estimated.

The above data are based on Federal Excise tax collections. The excise tax does not apply on parts and accessories exported, so these values apply for domestic sales only. Prior to July 1, 1944, sales to U. S. Government were not subject to the tax, but have been since that date.



Monthly Sales of Parts and Accessories in the U. S., 1944-1949*

Month	1949	1948	1947	1946	1945	1944
January	$197,157,600	$185,849,230	$181,118,000	$127,253,760	$93,602,000	$62,639,440
February	173,658,000	203,993,600	201,061,400	131,824,160	89,529,120	57,592,720
March	167,357,800	218,980,200	194,672,170	141,749,200	115,370,200	67,048,380
April	171,985,910	251,843,500	178,323,680	108,620,100	118,461,980	57,611,860
May	157,077,540	192,566,150	212,623,100	146,114,660	118,178,100	57,996,540
June	172,172,250	254,362,900	175,730,820	130,410,900	129,543,740	73,864,560
July	137,159,760	213,983,500	184,101,360	118,871,160	91,432,760	74,502,800
August	167,084,340	244,890,700	256,863,200	175,002,680	123,951,240	70,657,740
September	153,414,420	202,219,700	198,352,320	145,876,740	101,457,320	66,556,540
October	153,741,740	268,940,400	227,763,200	195,721,800	99,932,480	88,610,840
November	136,165,540	156,790,680	254,845,100	150,221,320	97,885,600	58,517,320
December	....	158,451,200	88,095,260	181,251,720	105,581,660	81,125,240
Total	†$1,912,000,000	$2,552,871,760	$2,353,523,120	$1,752,918,200	$1,284,926,200	$816,723,960

* As there is approximately a two months' lag between the month in which sales are made and the month in which collections are normally reported, the estimated sales volumes, recorded above are based on the monthly collections commencing March 1st. † Partly estimated.

1947 Production and Use of Parts for Cars, Trucks and Buses*

PRODUCT	Total Number of Units Produced[1]	Total Number of Units Used in Assembly of New Vehicles	Total Number of Units for Replacement and Other Purposes
Engines, new (with or without cylinder heads, fuel pumps, water pumps and other standard components):			
Gasoline	5,767,000	4,680,000	1,087,000
Diesel and semi-Diesel	15,000	13,000	2,000
Carburetors	8,657,000	4,680,000	3,977,000
Pistons:			
Aluminum	50,407,000	22,650,000	27,757,000
All Other	16,396,000	8,218,000	8,178,000
Piston Rings:			
Oil Type	197,582,000	47,901,000	149,681,000
Compression	356,113,000	62,148,000	293,965,000
Water Pumps	9,485,000	5,546,000	3,939,000
Storage Batteries	[2]31,652,000	4,693,000	[2]26,959,000
Battery Charging Generators	5,728,000	4,693,000	1,035,000
Starting Motors	[2]5,751,000	4,693,000	1,058,000
Spark Plugs	[3]252,116,000	30,797,000	221,319,000
Mufflers (exhaust)	13,559,000	4,693,000	8,866,000
Muffler Tailpipes	8,125,000	4,693,000	3,432,000
Radiators, complete	5,817,000	4,693,000	1,124,000
Radiator cores (includes cores incorporated in complete radiators)	5,840,000	4,693,000	1,147,000
Wheels (car, truck and bus types—including those for truck trailers and trailer coaches)	29,088,000	24,691,000	4,397,000
Universal Joints	12,937,000	6,976,000	5,961,000
Shock Absorbers	21,340,000	16,696,000	4,644,000
Fan Belts and similar type belts for motor vehicle engines	35,667,000	5,678,000	29,989,000
Clutch Disc and Facing Assemblies	11,778,000	4,472,000	7,306,000

*—1947 Census of Manufacturers.

1—The number of motor vehicle parts for the replacement market was derived from the figures on "Total Number of Units Produced" reported by parts producers and motor vehicle manufacturers and the figures on "Total Number of Units Used in Assembly of New Vehicles" reported by motor vehicle producers. The number of units produced included some parts suitable for use in motor vehicles but which may have been used for other purposes. However all parts included were "new" parts. Rebuilt engines, carburetors, pistons, etc., were not included.

2—Includes a small quantity used for farm tractors.

3—Includes a very small quantity of aircraft type spark plugs.

CENSUS OF

Car Dealer Franchises by Makes by Population Groups*

As of January, 1950

Make of Car	Under 1,000	1,000-2,500	2,500-5,000	5,000-10,000	10,000-25,000	25,000-50,000	50,000-100,000	Over 100,000	Total Franchises
	POPULATION DIVISIONS								
Buick	165	495	597	621	482	181	104	195	2,840
Cadillac	20	65	182	287	353	142	89	114	1,252
Chevrolet	1,931	1,996	1,133	781	567	211	136	415	7,190
Chrysler	447	613	572	519	502	184	110	313	3,260
De Soto	408	492	384	446	473	192	113	303	2,811
Dodge	502	830	739	675	527	192	121	308	3,894
Ford	1,498	1,895	1,107	774	583	210	144	451	6,662
Hudson	180	233	328	395	428	172	111	283	2,128
Kaiser-Frazer	516	588	431	400	352	140	97	241	2,765
Lincoln	37	56	86	163	295	153	98	165	1,053
Mercury	97	120	154	227	324	154	101	192	1,369
Nash	32	46	86	204	356	169	100	185	1,178
Oldsmobile	214	611	648	579	495	184	113	239	3,083
Packard	28	74	180	298	349	158	104	176	1,363
Plymouth	1,357	1,935	1,695	1,640	1,502	588	344	924	9,985
Pontiac	336	839	748	829	506	195	112	259	3,824
Studebaker	194	288	338	449	460	179	116	246	2,270
Willys	192	239	214	233	257	119	85	152	1,491
All Others	35	90	53	65	78	61	48	146	566
Total Franchises	8,189	11,495	9,675	9,383	8,907	3,562	2,248	5,307	58,764

* Trade List Department—Chilton Company.

81% of Dealers in Towns Under 25,000

Car Dealer Franchises by States by Population Groups*

As of January, 1950

State	Under 1,000	1,000-2,500	2,500-5,000	5,000-10,000	10,000-25,000	25,000-50,000	50,000-100,000	Over 100,000	Total Franchises
	POPULATION DIVISIONS								
Alabama	56	142	108	109	90	56	46	42	649
Arizona	31	66	59	116	.....	21	25	.....	318
Arkansas	64	163	223	161	99	21	21	.....	752
California	187	454	524	508	474	244	166	416	2,973
Colorado	94	171	125	127	93	18	22	66	716
Connecticut	28	67	83	91	178	118	55	76	696
Delaware	22	35	39	17	.....	.....	.....	21	134
District of Columbia	.....	.....	.....	.....	.....	.....	.....	105	105
Florida	30	127	232	159	194	56	21	84	903
Georgia	66	227	191	185	182	19	72	44	986
Idaho	80	129	182	50	114	21	.....	.....	576
Illinois	446	639	471	547	466	263	155	476	3,460
Indiana	202	342	226	351	264	178	78	141	1,782
Iowa	450	479	313	262	152	106	78	31	1,870
Kansas	266	353	259	178	259	22	18	60	1,415
Kentucky	148	290	174	143	68	93	15	51	982
Louisiana	59	135	138	156	61	45	21	31	646
Maine	44	73	90	129	98	32	21	.....	487
Maryland	180	110	98	15	91	37	.....	124	655
Massachusetts	46	93	148	221	430	217	138	283	1,576
Michigan	365	557	271	329	342	148	124	303	2,439
Minnesota	576	532	291	295	190	16	.....	161	2,061
Mississippi	79	179	134	115	169	18	21	.....	715
Missouri	296	333	237	238	200	21	39	207	1,541
Montana	112	158	105	113	77	37	.....	.....	602
Nebraska	257	297	153	110	119	.....	21	40	997
Nevada	31	50	33	21	19	.....	.....	.....	154
New Hampshire	19	58	53	32	94	41	25	.....	322
New Jersey	89	136	175	299	330	182	100	148	1,459
New Mexico	36	48	63	121	79	25	.....	.....	372
New York	492	563	565	426	581	183	202	713	3,725
North Carolina	139	245	205	171	244	68	84	22	1,189
North Dakota	249	196	24	85	57	21	.....	.....	631
Ohio	324	483	394	497	435	250	86	475	2,894
Oklahoma	64	302	213	262	278	42	.....	56	1,217
Oregon	118	133	183	151	98	20	.....	56	799
Pennsylvania	868	612	646	797	870	198	230	421	4,342
Rhode Island	22	19	17	12	36	54	19	45	224
South Carolina	37	125	132	131	90	42	41	.....	598
South Dakota	167	187	80	47	91	23	.....	.....	615
Tennessee	92	157	217	172	102	18	.....	106	864
Texas	270	767	861	743	411	150	143	162	3,507
Utah	36	102	102	51	41	21	.....	30	383
Vermont	51	65	41	73	31	19	.....	.....	280
Virginia	322	196	151	116	95	82	69	65	1,096
Washington	196	221	190	84	136	56	.....	136	1,019
West Virginia	131	204	112	146	127	38	68	.....	826
Wisconsin	542	380	282	192	180	223	42	110	1,951
Wyoming	34	129	62	29	72	.....	.....	.....	326
Total Franchises	8,189	11,495	9,675	9,383	8,907	3,562	2,248	5,307	58,764
Per Cent of Total—1950	13.94%	19.56%	16.46%	15.97%	15.16%	6.06%	3.82%	9.03%	100.00%
Per Cent of Total—1942	17.45%	19.68%	15.54%	14.58%	13.63%	5.86%	3.58%	9.68%	100.00%

* Trade List Department—Chilton Company

CAR DEALERS

Car Dealer Franchises by Makes, by Years*

(As of January of Each Year)

Note:—The term "Passenger Car Franchises" refers to retail outlets of any given make. A dealer organization often handles more than one make of passenger car.

Car Make	1950	1948	1942	1941	1940	1939	1938	1937	1936	1935
Buick	2,840	2,361	2,544	2,491	2,572	2,657	2,780	2,516	2,466	2,303
Cadillac	1,252	873	748	694	710	698	803	648	649	541
Chevrolet	7,190	6,986	7,795	7,962	8,100	8,406	8,752	8,776	8,667	8,578
Chrysler	3,260	3,036	3,333	3,328	3,276	3,383	3,837	4,007	4,309	4,360
De Soto	2,811	2,549	2,465	2,469	2,512	2,698	2,926	2,686	3,406	1,680
Dodge	3,894	3,670	3,863	3,733	3,959	4,113	4,380	4,087	3,772	3,297
Ford	6,662	6,620	7,034	7,158	7,404	7,825	8,245	8,301	7,949	7,388
Graham	......	......	......	......	480	611	877	958	1,120	782
Hudson	2,128	2,144	2,342	2,667	2,436	2,661	3,390	3,263	3,023	2,641
Hupmobile	......	......	......	......	......	191	302	......	771	763
Kaiser-Frazer	2,765	1,889	......	......	......	......	......	......	......	......
Lincoln	1,063	......	2,516	2,356	2,211	1,665	......	......	......	......
Lincoln-Mercury	......	1,946	......	......	......	......	......	......	......	......
Mercury	1,369	......	4,300	3,658	2,118	......	......	......	......	......
Nash	1,178	1,161	1,792	1,775	1,796	1,533	1,753	1,314	1,400	1,203
Oldsmobile	3,083	2,533	2,543	2,448	2,424	2,493	2,588	2,464	2,227	1,611
Packard	1,363	1,344	1,117	1,131	1,031	1,008	1,283	1,128	843	486
Plymouth	9,965	9,236	9,670	9,530	9,747	10,184	11,143	11,072	11,487	9,537
Pontiac	3,624	2,854	3,370	3,370	3,439	3,411	4,006	3,413	2,791	2,314
Studebaker	2,270	1,914	2,792	3,316	2,400	1,873	2,335	2,080	1,832	1,906
Willys Overland	1,491	1,156	1,296	1,584	913	1,143	1,476	880	......	......
All Others	866	202	161	629	486	386	2,289	1,779	3,046	3,652
Total Franchises	58,784	52,464	59,703	60,296	58,034	57,046	63,135	59,384	59,756	53,002

* Trade List Department—Chilton Company.

Car Dealer Franchises by Makes by States*

(As of January, 1950)

State	Buick	Cadillac	Chevrolet	Chrysler	De Soto	Dodge	Ford	Hudson	Kaiser-Frazer	Lincoln	Mercury	Nash	Oldsmobile	Packard	Plymouth	Pontiac	Studebaker	Willys	All Others	Total Franchises
Alabama	26	9	100	33	25	45	100	31	17	9	14	12	31	11	103	32	24	17	10	649
Arizona	23	12	34	13	12	21	31	8	7	8	9	10	18	6	46	15	19	8	18	310
Arkansas	31	13	84	41	39	59	90	21	41	9	10	11	38	14	139	48	33	29	2	752
California	186	84	290	139	149	190	288	123	99	87	101	65	160	114	478	162	159	75	54	2,973
Colorado	34	16	85	60	22	48	74	30	37	12	17	13	35	20	120	39	30	21	13	716
Connecticut	42	21	75	38	30	43	57	32	30	12	13	19	40	23	111	49	34	16	11	696
Delaware	5	2	17	6	4	10	13	5	8	4	5	4	8	2	20	8	6	3	4	134
District of Columbia	2	1	5	7	6	6	14	8	4	1	2	4	3	4	19	4	4	2	9	105
Florida	43	30	104	41	40	65	99	26	48	22	24	14	45	23	146	49	34	32	18	903
Georgia	39	23	146	57	34	75	136	25	30	20	27	12	47	19	166	64	33	26	5	986
Idaho	28	18	50	21	27	43	51	19	31	15	22	13	37	16	91	32	27	29	6	576
Illinois	179	73	427	183	160	225	397	122	230	61	71	77	178	88	568	196	133	68	22	3,480
Indiana	98	40	215	86	91	116	198	84	91	24	28	32	100	49	293	102	71	42	22	1,782
Iowa	107	36	280	100	81	118	263	82	108	21	34	29	87	26	299	115	72	32	10	1,870
Kansas	64	29	199	76	64	96	174	47	62	24	42	28	78	28	236	82	39	22	27	1,418
Kentucky	47	8	131	58	49	79	129	31	33	17	18	11	47	22	186	56	27	30	3	982
Louisiana	23	15	81	40	19	62	82	17	28	9	10	8	34	10	111	46	25	34	2	646
Maine	21	9	65	22	16	26	63	22	31	9	11	10	24	14	64	38	16	24	2	487
Maryland	28	10	60	43	42	43	64	35	29	13	13	15	32	13	128	35	32	17	3	666
Massachusetts	74	49	160	96	88	90	139	68	73	31	35	47	95	38	274	110	62	36	10	1,575
Michigan	128	46	294	122	127	139	286	109	142	54	68	49	135	41	386	169	65	57	21	2,439
Minnesota	105	32	319	126	100	125	267	55	81	25	53	38	105	26	351	113	76	25	39	2,061
Mississippi	24	14	103	50	35	52	99	16	17	12	15	14	26	14	137	42	27	15	3	715
Missouri	49	16	217	95	86	114	202	35	59	26	36	30	74	24	295	95	51	28	7	1,541
Montana	23	14	71	24	22	43	64	23	46	13	18	11	34	17	89	37	29	23	1	602
Nebraska	50	23	150	70	35	59	137	24	61	10	18	9	42	16	164	56	37	28	6	967
Nevada	8	4	12	9	9	10	19	5	7	4	4	3	6	6	28	8	7	5	......	154
New Hampshire	18	8	45	15	11	22	35	13	14	7	9	10	19	7	48	22	7	9	3	322
New Jersey	61	37	137	95	79	97	116	64	64	28	30	39	74	45	271	85	66	39	31	1,458
New Mexico	25	7	43	19	17	24	38	13	17	8	10	9	26	11	60	24	15	7	1	372
New York	163	80	404	205	177	252	385	155	184	69	74	86	223	113	634	246	162	99	34	3,725
North Carolina	60	26	152	63	47	87	153	39	41	18	23	16	61	26	197	84	46	27	3	1,169
North Dakota	20	8	112	37	32	37	97	15	20	8	21	10	24	3	106	34	30	14	3	631
Ohio	151	62	348	165	165	173	307	114	132	53	69	58	161	78	503	180	106	60	9	2,894
Oklahoma	62	29	165	54	67	81	144	31	48	19	26	21	78	22	202	93	31	38	12	1,217
Oregon	34	20	82	36	39	50	71	28	53	14	20	18	33	23	125	47	31	28	4	786
Pennsylvania	197	90	456	250	214	265	427	198	229	78	92	116	233	115	749	263	176	117	57	4,342
Rhode Island	10	5	17	13	14	13	14	10	13	7	7	8	13	8	40	13	12	4	3	224
South Carolina	30	17	84	30	25	46	83	20	15	13	13	8	25	13	101	38	19	14	4	596
South Dakota	30	9	94	27	34	33	106	18	29	8	22	10	24	8	94	32	23	11	3	615
Tennessee	40	16	109	51	42	80	100	33	34	19	26	13	38	10	153	56	41	18	5	864
Texas	188	77	415	226	178	256	375	103	129	64	84	51	106	79	660	228	105	90	13	3,507
Utah	21	14	38	22	17	24	36	19	22	6	10	5	19	8	63	26	20	8	5	383
Vermont	13	7	34	17	12	16	29	8	17	4	7	8	15	8	45	17	11	6	6	290
Virginia	42	16	141	66	54	78	139	29	54	17	21	17	49	18	200	79	46	22	8	1,086
Washington	41	23	104	59	49	67	112	32	73	15	21	28	64	25	175	55	37	38	13	1,019
West Virginia	38	12	93	47	34	56	86	34	49	14	25	16	42	20	137	43	31	45	6	828
Wisconsin	121	37	323	99	80	119	263	61	63	26	36	37	115	29	298	135	66	42	1	1,951
Wyoming	20	4	18	16	12	26	33	18	15	6	6	6	16	10	54	18	18	16	16	326
Total	2,840	1,252	7,190	3,260	2,811	3,894	6,662	2,128	2,765	1,053	1,369	1,178	3,083	1,363	9,965	3,624	2,270	1,491	866	58,784

* Trade List Department—Chilton Company.

Automotive Wholesalers, Dealers and Repair Shops—by Years*

(As of January of Each Year)

	Wholesalers	Passenger Car Dealers	Total Truck Dealers	Car and Truck Dealers	Independent Repair Shops	All Retail Outlets‡
1930	4,028	51,560	25,436	......	47,882	117,493
1931	4,668	47,144	26,137	48,658	53,898	118,713
1932	5,051	42,881	25,952	43,708	58,045	108,147
1933	5,337	38,003	23,746	39,370	59,547	103,113
1934	5,430	34,069	......	35,265	65,064	102,456
1935	5,757	35,977	......	37,238	64,518	105,991
1936	5,905	39,769	23,045	41,201	60,574	105,579
1937	5,874	41,288	24,853	43,461	56,423	102,808
1938	5,934	43,747	27,248	46,224	51,709	101,053
1939	6,019	39,936	26,909	41,992	50,406	95,418
1940	6,176	39,258	24,575	41,870	49,091	93,764
1941	6,575	39,833	24,992	41,790	49,208	95,296
1942	6,631	38,748	32,291	40,537	47,552	93,022
1943	6,130	32,470	27,820	34,270	43,540	80,863
1944	6,101	31,200	......	33,000	42,166	78,550
1945	6,217	30,110	26,370	31,930	41,193	78,498
1946	6,612	30,709	27,159	32,439	42,702	81,638
1947	7,328	34,424	29,397	36,354	49,485	91,229
1948	7,982	38,480	25,998†	40,410	55,694	104,504
1949	8,338	40,022	27,574	43,004	59,908	109,499
1950	8,567	43,079	28,307	45,918	63,714	115,026

* Trade List Department—Chilton Company. † Reduction in truck dealers caused by discontinuance of Plymouth truck production.
‡ Includes Car and Truck Dealers, Independent Repair Shops, Regular and Specialized Body and Fender Repair Shops.

Automotive Wholesale and Retail Outlets, by States

With Number of Motor Vehicles per Outlet

STATE	Total Motor Vehicle Registrations	WHOLESALERS: Number of Wholesalers	WHOLESALERS: Motor Vehicles per Wholesalers	DEALERS: Passenger Car Dealers	DEALERS: Truck Dealers	DEALERS: Car and Truck Dealers	DEALERS: Motor Vehicles per Car and Truck Dealer	REPAIR SHOPS: Inde-pendent Repair Shops	REPAIR SHOPS: Motor Vehicles per Repair Shop	RETAIL OUTLETS*: All Retail Outlets	RETAIL OUTLETS*: Motor Vehicles per Outlet
Alabama	545,704	143	3,816	485	366	502	1,087	379	1,440	927	589
Arizona	234,444	69	3,398	234	162	237	989	396	592	717	327
Arkansas	405,509	129	3,143	606	406	603	672	545	744	1,131	359
California	3,971,141	745	5,330	2,182	1,376	2,306	1,722	6,420	619	9,337	425
Colorado	507,849	105	4,837	526	362	703	722	850	597	1,453	350
Connecticut	620,251	123	5,043	542	311	552	1,124	834	744	1,545	401
Delaware	90,317	22	4,105	101	68	103	877	242	373	388	233
District of Columbia	172,289	24	7,179	67	39	83	2,076	192	897	306	563
Florida	867,474	163	5,322	639	416	673	1,289	754	1,150	1,486	584
Georgia	797,678	168	4,748	718	521	750	1,064	459	1,738	1,258	634
Idaho	238,209	67	3,555	394	289	433	550	511	466	965	247
Illinois	2,414,757	460	5,249	2,513	1,583	2,738	882	3,794	636	6,823	354
Indiana	1,303,960	240	5,433	1,326	911	1,443	904	1,820	716	3,290	396
Iowa	973,843	215	4,530	1,382	994	1,498	650	1,388	702	3,055	319
Kansas	814,414	166	4,906	1,029	695	1,086	750	981	830	2,079	392
Kentucky	682,658	141	4,842	700	499	772	884	465	1,468	1,324	516
Louisiana	613,103	113	5,426	473	349	514	1,193	498	1,231	1,056	581
Maine	247,082	58	4,260	374	258	399	619	555	445	929	266
Maryland	607,250	103	5,896	483	290	504	1,205	924	657	1,463	415
Massachusetts	1,169,215	228	5,128	1,178	667	1,218	960	1,529	765	2,950	396
Michigan	2,184,003	338	6,462	1,785	1,095	1,859	1,175	2,830	772	4,954	441
Minnesota	1,058,441	161	6,574	1,468	1,090	1,640	645	1,822	581	3,632	291
Mississippi	403,889	99	4,080	515	366	538	751	210	1,923	772	523
Missouri	1,205,000	266	4,530	1,172	751	1,235	976	1,342	898	2,762	436
Montana	240,467	62	3,878	454	322	483	498	357	674	900	267
Nebraska	557,729	116	4,808	697	527	772	722	901	619	1,757	317
Nevada	66,595	16	4,162	103	69	115	579	155	430	293	227
New Hampshire	162,017	29	5,587	241	165	241	672	290	559	557	291
New Jersey	1,424,015	230	6,191	1,062	640	1,160	1,228	2,631	541	4,057	351
New Mexico	186,168	63	2,955	260	170	274	679	402	463	704	264
New York	3,330,422	561	5,937	2,815	1,691	2,943	1,132	6,433	518	10,222	326
North Carolina	899,645	206	4,367	877	580	920	978	783	1,149	1,760	511
North Dakota	255,790	53	4,826	460	363	508	504	429	596	950	269
Ohio	2,500,615	463	5,401	2,123	1,284	2,261	1,106	2,786	898	5,231	478
Oklahoma	748,627	185	4,047	893	614	965	776	1,072	698	2,151	348
Oregon	621,415	140	4,439	551	364	589	1,055	1,367	455	2,046	304
Pennsylvania	2,856,486	534	5,349	3,085	1,852	3,234	883	5,491	520	9,199	311
Rhode Island	231,928	38	6,103	161	82	178	1,303	304	763	537	432
South Carolina	500,872	92	5,444	441	296	453	1,106	334	1,450	755	663
South Dakota	269,215	42	6,410	451	333	478	563	344	783	856	315
Tennessee	686,600	146	4,703	638	434	673	1,020	615	1,116	1,337	514
Texas	2,475,000	525	4,714	2,551	1,669	2,700	917	3,523	703	6,299	393
Utah	220,104	70	3,144	268	192	287	767	511	431	835	264
Vermont	114,526	21	5,454	201	132	214	535	251	456	485	236
Virginia	819,448	126	6,504	825	535	863	950	780	1,051	1,710	479
Washington	838,409	186	4,508	760	484	799	1,049	1,987	422	2,934	286
West Virginia	387,513	90	4,306	596	434	645	601	700	554	1,401	277
Wisconsin	1,121,332	194	5,780	1,431	1,036	1,521	737	1,355	828	2,995	374
Wyoming	130,564	33	3,956	243	175	253	516	173	755	453	288
Total	43,773,982	8,567	5,104	43,079	28,307	45,918	953	63,714	687	115,026	381

† Trade List Department—Chilton Co.
* All retail outlets include passenger car and truck dealers, independent repair shops (regular and specialized), and body and fender repair shops.

Total Registrations

CARS • TRUCKS • BUSES

50 Years of Registrations

U. S. Motor Vehicle Registrations, 1900-1949

Year	PASSENGER CARS Units	PASSENGER CARS Per Cent of Total	PASSENGER CARS Per Cent Increase	TRUCKS AND BUSES Units	TRUCKS AND BUSES Per Cent of Total	TRUCKS AND BUSES Per Cent Increase	TOTAL VEHICLES Units	TOTAL VEHICLES Per Cent Increase
1900	8,000	....	150	....	....	.....	8,000	150
1901	14,800	....	85	....	....	.....	14,800	85
1902	23,000	....	55	....	....	.....	23,000	55
1903	32,920	....	43	....	....	.....	32,920	43
1904	54,590	98.7	66	700	1.3	.....	55,290	68
1905	77,400	98.2	42	1,400	1.8	100	78,800	43
1906	105,900	98.0	37	2,200	2.0	57	108,100	37
1907	140,300	98.0	33	2,900	2.0	32	143,200	32
1908	194,400	98.0	38	4,000	2.0	38	198,400	38
1909	305,950	98.1	57	6,050	1.9	51	312,000	57
1910	458,377	97.8	50	10,123	2.2	65	468,500	50
1911	618,727	96.8	35	20,773	3.2	105	639,500	36
1912	901,596	95.5	46	42,404	4.5	104	944,000	48
1913	1,190,393	94.6	32	67,667	5.4	60	1,258,060	33
1914	1,664,003	94.4	36	99,015	5.6	46	1,763,018	40
1915	2,332,426	93.6	42	158,506	6.4	60	2,490,932	41
1916	3,367,889	93.1	43	250,048	6.9	58	3,617,937	45
1917	4,727,468	92.4	42	391,057	7.6	56	5,118,525	41
1918	5,554,952	90.2	21	605,496	9.8	55	6,160,448	20
1919	6,679,133	88.2	21	897,755	11.8	48	7,576,888	23
1920	8,131,522	88.0	22	1,107,639	12.0	23	9,239,161	22
1921	9,212,158	87.8	14	1,281,508	12.2	16	10,493,666	11
1922	10,704,076	87.2	16	1,569,523	12.8	22	12,273,599	17
1923	13,253,019	87.8	24	1,849,086	12.2	18	15,102,105	23
1924	15,436,102	87.6	15	2,176,838	12.4	18	17,612,940	17
1925	17,439,701	87.5	13	2,501,023	12.5	15	19,940,724	13
1926	19,220,885	87.3	10	2,831,674	12.7	13	22,052,559	11
1927	20,142,120	87.2	5	2,997,439	12.8	6	23,139,559	5
1928	21,308,159	87.1	6	3,203,524	12.9	7	24,511,683	6
1929	23,060,421	87.1	8	3,442,087	12.9	7	26,502,508	8
1930	22,972,745	86.7	−0.4	3,559,254	13.3	3.4	26,531,999	0.1
1931	22,420,629	86.3	−2.4	3,573,267	13.7	0.4	25,993,896	−2.0
1932	20,994,092	86.2	−6.4	3,347,730	13.8	−6.3	24,341,822	−6.4
1933	20,557,493	86.2	−2.1	3,292,439	13.8	−1.7	23,849,932	−2.0
1934	21,535,199	86.6	4.7	3,346,268	13.4	1.6	24,881,467	4.3
1935	22,513,715	86.1	4.5	3,644,997	13.9	8.9	26,158,712	5.1
1936	24,044,432	85.6	6.8	4,047,277	14.4	11.0	28,091,709	7.4
1937	25,356,786	85.5	5.5	4,292,484	14.5	6.1	29,649,270	5.5
1938	25,264,589	85.5	−0.4	4,283,395	14.5	−0.2	29,547,984	−0.3
1939	26,147,798	85.3	3.5	4,496,770	14.7	5.0	30,644,568	3.7
1940	27,240,475	85.3	4.2	4,683,376	14.7	4.1	31,923,851	4.2
1941	29,240,417	85.6	7.3	4,911,990	14.4	4.9	34,152,407	7.0
1942	27,683,529	85.4	−5.3	4,741,298	14.6	−3.5	32,424,827	−5.1
1943	25,841,215	84.7	−6.7	4,657,882	15.3	−1.8	30,499,097	−6.0
1944	25,298,639	84.6	−2.1	4,611,966	15.4	−1.0	29,910,605	−1.9
1945	25,396,824	83.5	0.4	5,025,233	16.5	9.0	30,424,057	1.7
1946	27,834,543	82.6	9.6	5,858,813	17.4	16.6	33,693,356	10.7
1947	30,482,007	81.8	9.6	6,754,256	18.2	15.4	37,236,263	10.6
1948	33,011,780	81.5	8.3	7,490,343	18.5	11.0	40,502,123	8.9
1949	35,904,770	82.0	8.8	7,869,212	18.0	5.0	43,773,982	8.0

− Denotes decrease. Sources: Public Roads Administration through 1930; 1931 to 1949 Automotive Industries count.

U. S. and World Registra

World Registrations by Continental Divisions*

Continent	Passenger Cars	Trucks	Buses	Total Motor Vehicles 1949	Total Motor Vehicles 1948
Europe	6,288,523	5,037,143	247,662	11,615,828	10,737,148
Asia	376,789	385,902	64,384	934,535	756,208
Africa	734,283	311,560	8,309	1,062,583	850,171
Oceania	1,063,484	519,781	8,133	1,593,898	1,491,967
Americas (less U. S. A.)	2,553,782	1,157,144	76,926	3,827,745	3,473,165
World Total—Less U. S. A.—1949	11,016,861	7,411,530	405,414	19,034,589‡	17,308,659‡
United States—1949	35,904,770	7,711,667	157,545	43,773,982	40,502,123‡
World Total—Including U. S. A.—1949†	46,921,631	15,123,197	562,959	62,808,571‡	....
World Total—Including U. S. A.—1948†	42,822,643	14,266,507	423,487	....	57,810,782

* Source of Data: The American Automobile (Overseas Edition) and El Automovil Americano.
† Not complete for all territories.
‡ Several territories only reported total motor vehicles, so the totals will be greater than the sum of cars, trucks and buses.

Total U. S. Motor Vehicle Registrations by States, 1949-1948

As of the End of the Registration Year

STATE	Passenger Cars(1) 1949	Passenger Cars(1) 1948	Trucks 1949	Trucks 1948	Buses 1949	Buses 1948	Total Motor Vehicles 1949	Total Motor Vehicles 1948	Per Cent of Total 1949	Per Cent of Total 1948
Alabama	406,261	366,308	137,405	127,065	2,038	2,085	545,704	495,458	1.25	1.22
Arizona	180,560	161,436	52,919	48,647	945(1)	813(1)	234,444	210,896	.54	.52
Arkansas	281,667	254,651	121,413*	125,161	2,429*	2,637	405,509	382,449	.93	.94
California(4)	3,404,861(5)	3,057,671	559,369	529,492	6,911	6,834	3,971,141(4)	3,593,997	9.08	8.88
Colorado	383,140	352,305	124,709	115,006	(2)	(2)	507,849	467,311	1.16	1.15
Connecticut	539,765	508,390	77,716	75,691	2,770	2,507	620,251	586,668	1.42	1.45
Delaware	72,635	65,810	17,682	17,557	(2)	(2)	90,317	83,367	.21	.21
Dist. of Columbia	151,787	142,440	18,389	18,389	2,113	1,196	172,289	162,025	.39	.40
Florida	698,382	621,443	165,307	156,639	3,785	5,786	867,474	783,868	1.98	1.94
Georgia	614,299	540,903	178,479	167,525	4,900	4,965	797,678	713,393	1.82	1.76
Idaho	174,058	156,864	64,137	59,644	14	(2)	238,209	216,508	.54	.53
Illinois	2,078,583	1,899,690	336,174	315,988	......	......	2,414,757	2,215,678	5.52	5.47
Indiana	1,090,153	1,059,447	206,154	227,480	7,653	8,530	1,303,960	1,295,457	2.98	3.20
Iowa	805,540	732,558	168,303	150,973	(2)	(2)	973,843	883,531	2.22	2.18
Kansas	618,965	572,432	195,449	183,733	(2)	(2)	814,414	756,165	1.86	1.87
Kentucky	527,717	469,502	154,941	137,711	(2)	(2)	682,658	607,213	1.56	1.50
Louisiana	469,526	393,352	140,001	122,935	3,576	3,514	613,103	519,801	1.40	1.28
Maine	186,771	183,162	59,894	62,210	417	433	247,082	245,805	.56	.61
Maryland	510,800	470,394	92,200	90,935	4,250	3,900	607,250	565,229	1.39	1.40
Massachusetts	1,010,185	943,952	153,208	151,609	5,822	5,724	1,169,215	1,101,285	2.67	2.72
Michigan	1,913,694	1,746,023	270,309	258,689	(2)	(2)	2,184,003	2,004,712	4.99	4.95
Minnesota	875,538	782,819	182,532	163,756	371	399	1,058,441	946,974	2.42	2.34
Mississippi	276,041	241,419	123,954	117,537	3,894	3,532	403,889	362,488	.92	.90
Missouri	960,000	877,356	245,000	227,205	(2)	(2)	1,205,000	1,104,561	2.76	2.73
Montana	163,991	145,402	76,476	70,391	(2)	(2)	240,467	215,793	.55	.53
Nebraska	434,700	398,565	122,100	105,750	929	840	557,729	505,155	1.27	1.25
Nevada	52,044	47,573	14,551	13,417	(3)	(3)	66,595	60,990	.15	.15
New Hampshire	125,803	117,501	36,214	31,623	(2)	(2)	162,017	149,124	.37	.37
New Jersey	1,210,750	1,109,148	207,326	199,260	5,939	6,890	1,424,015	1,315,298	3.25	3.25
New Mexico	136,800	126,492	48,400	45,696	968	993	186,168	173,181	.43	.43
New York	2,825,041	2,679,075	493,868	498,125	11,513	11,249	3,330,422	3,188,449	7.61	7.88
North Carolina	713,195	655,569	177,742	167,824	8,708	2,941	899,645	826,334	2.06	2.04
North Dakota	178,348	169,601	77,347	68,919	95	124	255,790	238,644	.58	[illegible]
Ohio	2,184,806	2,096,623	304,801	296,296	11,008	3,629	2,500,615	2,396,548	5.72	[illegible]
Oklahoma	558,992	509,709	183,435	162,941	6,200	6,271	748,627	678,921	1.71	[illegible]
Oregon	496,326	448,545	123,897	115,648	1,192	1,496	621,415	565,689	1.42	[illegible]
Pennsylvania	2,415,033	2,219,000	428,853	416,551	12,600	12,800	2,856,486	2,648,351	6.53	[illegible]
Rhode Island	201,131	188,949	30,181	29,662	616	656	231,928	219,267	.53	.54
South Carolina	395,870	357,265	100,633	91,849	4,369	2,918	500,872	452,032	1.14	1.12
South Dakota	202,249	185,860	66,656	60,163	310	305	269,215	246,328	.62	.61
Tennessee	539,800	518,604	144,000	139,020	2,800	2,716	686,600	660,340	1.57	1.63
Texas	1,930,000	1,778,748	531,000	526,000	14,000	5,518	2,475,000	2,310,266	5.65	5.71
Utah	177,167	162,179	42,308	39,637	629	578	220,104	202,394	.51	.50
Vermont	99,332	95,861	15,023	15,355	171	173	114,526	111,389	.26	.27
Virginia	663,956	595,635	152,592	150,633	2,900	2,100	819,448	748,368	1.87	1.79
Washington	679,149	620,689	152,980	145,787	6,280	4,721	838,409	771,197	1.92	1.91
West Virginia	296,537	271,976	89,546	86,217	1,430	1,273	387,513	359,466	.89	.89
Wisconsin	897,596	829,100	210,736	196,503	13,000	12,664	1,121,332	1,038,267	2.56	2.56
Wyoming	95,206	83,784	35,358	31,709	......	......	130,564	115,493	.26	.29
Total	35,904,770	33,011,780	7,711,667	7,356,553	157,545	133,790	43,773,982	40,502,123	100.00	100.00

(1)—Includes taxicabs.
(2)—Included with trucks.
(3)—Included with passenger cars.
(4)—Does not include 122,461 passenger cars and 7,589 trucks originally registered in other states.
(5)—Approximately 151,000 light commercial vehicles registered as passenger cars were transferred to trucks.
*—Due to change in registration period for trucks and buses, these figures represent registrations for six month period only.

Note: In the above tabulation we have endeavored to make as accurate a count as existing conditions permit. This census is compiled from material secured direct from the state motor vehicle commissioners. Wherever possible, duplications, occasioned by transfers and non-resident registrations, have been eliminated. Data are for the registration year rather than the calendar year, even though this necessitates partial estimates in the case of those states whose registration year ends February or March of the following year.

tions of Motor Vehicles

Ranking of the States According to Total Registrations

Rank	State	Registrations
1	California	3,971,141
2	New York	3,330,422
3	Pennsylvania	2,856,486
4	Ohio	2,500,615
5	Texas	2,475,000
6	Illinois	2,414,757
7	Michigan	2,184,003
8	New Jersey	1,424,015
9	Indiana	1,303,960
10	Missouri	1,205,000
11	Massachusetts	1,169,215
12	Wisconsin	1,121,332
13	Minnesota	1,058,441
14	Iowa	973,843
15	North Carolina	899,645
16	Florida	867,474
17	Washington	838,409
18	Virginia	819,448
19	Kansas	814,414
20	Georgia	797,678
21	Oklahoma	748,627
22	Tennessee	686,600
23	Kentucky	682,658
24	Oregon	621,415
25	Connecticut	620,251
26	Louisiana	613,103
27	Maryland	607,250
28	Nebraska	557,729
29	Alabama	545,704
30	Colorado	507,849
31	South Carolina	500,872
32	Arkansas	405,509
33	Mississippi	403,889
34	West Virginia	387,513
35	South Dakota	269,215
36	North Dakota	255,790
37	Maine	247,082
38	Montana	240,467
39	Idaho	238,209
40	Arizona	234,444
41	Rhode Island	231,928
42	Utah	220,104
43	New Mexico	186,168
44	District of Columbia	172,289
45	New Hampshire	162,017
46	Wyoming	130,564
47	Vermont	114,526
48	Delaware	90,317
49	Nevada	66,595
	Total	43,773,982

Registrations of Taxicabs, Motorcycles and Trailers, 1949-1948

STATE	Taxicabs†		Motorcycles		Trailers and Semi-Trailers				Tax Exempt Vehicles††	
					Passenger Car or Tourist	Commercial Trailers	Total All Trailers			
	1949	1948	1949	1948			1949	1948	1949	1948
Alabama	3,245	3,404	8,121	8,174	n.r.	9,075	9,075	8,557	2,303	5,896
Arizona	(a)	168	3,547	3,543			21,011	19,693	3,923	3,631
Arkansas	1,037	1,141	2,903	3,279	337(b)	17,058(b)	17,395(b)	26,258	....	2,362
California	6,856	8,845	57,475	60,651	79,395	276,180	355,575	360,496	65,254	57,722
Colorado	(c)	(c)	4,749	4,890	....	....	19,642	17,113	....	....
Connecticut	538	721	3,865	4,210	13,831	5,754	19,285	19,493	3,672	5,791
Delaware	(c)	(c)	619	627	....	....	3,708	3,041	1,108	1,048
District of Columbia	9,225	10,102	865	898	....	....	1,576	1,506	6,467	3,333
Florida	8,679	8,800	16,318	15,565	77,031	21,118	98,149	79,734	11,861	12,710
Georgia	n.r.	n.r.	8,379	9,221	17,500	12,000	29,500	27,071	....	....
Idaho	284	279	2,967	3,223	....	....	32,607	34,774	....	....
Illinois	....	....	28,618	30,246	....	....	....	6,114	....	....
Indiana	(c)	(c)	22,846	15,501	8,000	34,643	42,643	40,000	3,700	3,900
Iowa	(c)	(c)	11,742	11,171	....	....	141,122	134,188	11,304	10,925
Kansas	(c)	(c)	8,856	9,430	....	....	17,374	16,415	....	....
Kentucky	(c)	(c)	8,374	7,941	n.r.	n.r.	n.r.	n.r.	6,855	6,244
Louisiana	3,856	3,635	7,175	7,162	1,900	33,178	35,078	30,270	3,884	2,897
Maine	1,210	1,431	2,697	2,982	....	....	18,309	17,974	....	....
Maryland	2,800	2,990	7,100	7,854	....	....	14,000	15,336	....	....
Massachusetts	(c)	(c)	6,228	6,884	....	....	48,136	46,417	6,328	6,247
Michigan	(d)	(d)	15,569	16,982	15,007	215,078	230,085	228,389	27,228	....
Minnesota	(c)	(c)	12,272	11,609	21,481	36,793	58,274	105,670	1,476	....
Mississippi	2,658	669	2,805	2,477	11,371	7,238	18,609	17,451	3,967	528
Missouri	(c)	(c)	9,500	9,594	....	....	82,000	79,200	....	2,700
Montana	(c)	(c)	1,366	1,368	....	....	6,659	6,148	967	....
Nebraska	645	590	6,139	5,480	4,075	7,764	11,839	10,250	1,568	1,460
Nevada	....	....	579	552	....	....	4,229	4,405	....	....
New Hampshire	(c)	(c)	2,087	2,244	....	....	9,466	9,248	3,234	....
New Jersey	3,382	3,456	9,929	10,479	....	....	23,867	23,904	....	....
New Mexico	....	....	2,276	2,294	....	....	....	5,541	....	1,679
New York	25,201	25,377	25,449	26,192	....	....	105,006	105,202	40,496	36,926
North Carolina	5,454	5,133	13,671	15,060	....	....	73,601	73,017	13,544	18,118
North Dakota	(c)	(c)	1,223	1,234	1,732	268	2,000	1,880	1,543	1,064
Ohio	(c)	(c)	24,754	26,781	....	....	189,976	187,650	19,951	26,402
Oklahoma	2,649	2,848	7,711	7,477	2,017	10,864	12,881	12,014	8,143	7,774
Oregon	(c)	(c)	7,373	7,116	10,175	11,260	21,435	19,475	8,840	8,120
Pennsylvania	(a)	(a)	30,971	32,214	....	....	83,043	81,888	....	....
Rhode Island	358	359	1,821	1,916	....	....	3,870	3,696	....	....
South Carolina	3,533	3,907	7,339	7,516	....	....	11,056	10,244	66	652
South Dakota	(c)	(c)	2,117	2,304	....	....	31,238	32,638	....	2,163
Tennessee	6,600	6,098	7,200	9,121	n.r.	n.r.	n.r.	n.r.	6,415	6,396
Texas	....	....	31,000	24,194	....	....	117,000	97,568	24,000	25,418
Utah	(d)	(d)	1,825	1,791	....	....	1,520	1,550	2,900	2,731
Vermont	(c)	(c)	1,010	1,108	....	....	5,955	5,556	....	....
Virginia	4,245	5,882	11,152	11,456	21,773	10,300	32,073	30,757	1,492	1,047
Washington	1,868	2,125	7,283	7,421	....	....	57,983	58,024	15,178	13,996
West Virginia	773	1,360	3,813	4,968	7,624	1,414	9,038	8,647	6,213	5,637
Wisconsin	(c)	(c)	10,777	11,171	4,101	9,236	13,337	12,864	13,468	13,638
Wyoming	....	....	1,226	1,100	....	....	14,619	13,600	2,064	1,748
Total	95,066	99,160	473,719	476,634	....	....	2,153,042	2,141,845	329,568	279,909

(a)—Included with busses.
(b)—Six months registration period only.
(c)—Included with passenger cars.
(d)—Included with trucks.

n.r.—Not recorded.

†—Taxicab registrations have been included with the passenger car and truck registrations shown by states on page 92.

††—These data include cars, trucks and motorcycles and are in addition to the motor vehicle registrations by states shown elsewhere. They are of state and municipal ownership and in a few cases include Federal vehicles.

Estimated Scrappage of Motor Vehicles

Year	Passenger Cars	Trucks	Total Motor Vehicles	Year	Passenger Cars	Trucks	Total Motor Vehicles
1928	1,973,540	135,038	2,108,578	1939	1,770,168	273,373	2,043,541
1929	2,127,944	288,494	2,416,438	1940	2,323,228	372,544	2,695,772
1930	2,713,655	293,532	3,007,187	1941	1,731,224	412,083	2,143,307
1931	2,460,257	299,871	2,760,128	1942†	1,861,579	248,114	2,109,693
1932	2,522,936	405,950	2,928,886	1943†	2,048,119	145,885	2,194,004
1933	1,930,393	301,160	2,231,553	1944†	608,306	167,185	775,491
1934	910,851	350,057	1,260,908	1945†	+28,308	+62,335	+90,643
1935	1,765,392	211,954	1,977,346	1946†	+620,523	+208,331	+828,854
1936	1,873,780	209,364	2,083,144	1947	519,767	+16,311	503,456
1937	2,171,398	373,042	2,544,440	1948	963,444	320,718	1,284,162
1938	1,983,218	374,438	2,357,656	1949*	2,250,000	575,000	2,825,000

† The actual computations for the years 1942 through 1946 give unrealistic scrappage estimates for these years because of the cars and trucks being placed in storage during 1942 and then being returned to service at the end of the war.
+ Indicates the increase in number of registrations over the number of new vehicles sold.
* Preliminary data.
These estimated scrappage data were computed from total registrations of cars and trucks as compiled by Automotive Industries and new registrations of cars and trucks as reported by R. L. Polk & Co.

Passenger Cars in Use by Makes and by Year of Manufacture*

(As of July 1, 1949)

Makes	1949	1948	1947	1946	1945-'42	1941	1940	1939	1938	1937	1936	1935	1934	1933	Prior to 1933	Year Unknown	Total July 1, 1949
Buick	198,737	202,095	243,593	138,113	80,822	346,475	233,846	181,287	140,130	176,462	114,624	31,127	23,663	13,816	55,370	8,138	2,215,081
Cadillac	44,893	48,388	53,797	26,265	13,602	58,983	13,304	11,582	7,800	10,031	7,283	1,808	1,302	743	4,796	671	304,248
Chevrolet	435,489	678,568	653,177	410,546	227,570	976,284	755,842	551,680	434,746	714,210	712,495	344,984	235,719	158,488	361,373	22,480	7,673,651
Chrysler	55,588	98,133	95,366	69,361	29,817	145,519	84,650	60,259	40,386	77,795	38,261	19,330	9,942	7,369	28,783	2,300	882,839
Crosley	5,404	23,510	17,295	1,808	904	945	243	459	....	....	....	....	....	....	....	244	50,892
De Soto	45,097	76,656	73,779	58,350	21,171	91,155	63,029	49,013	32,108	63,906	29,208	14,110	3,832	5,706	16,440	1,690	645,252
Dodge	109,228	195,351	215,628	146,866	61,076	221,438	183,855	168,887	95,385	237,681	193,203	92,231	38,382	29,049	49,267	6,709	2,044,216
Ford	641,769	298,113	405,342	408,482	146,419	649,035	510,158	402,849	295,534	634,304	579,540	410,223	224,700	79,049	971,670	26,515	6,644,702
Frazer	17,385	46,413	57,123	....	....	....	....	....	....	....	....	....	....	....	....	1,498	122,429
Graham	....	....	....	....	....	802	1,267	3,338	2,539	9,387	6,068	4,402	1,955	1,296	5,746	368	37,180
Hudson	85,113	100,757	76,368	74,975	33,463	81,149	74,141	40,866	32,166	73,129	53,634	24,088	12,983	5,181	17,670	2,575	788,258
Hupmobile	7	14	14	10	17	229	86	702	887	171	941	2,192	1,202	853	7,263	177	14,765
Kaiser	48,468	68,416	60,848	....	....	....	....	....	....	....	....	....	....	....	....	1,645	199,378
La Salle	....	....	....	....	....	....	20,474	19,129	12,271	23,163	8,352	4,491	1,675	829	3,075	673	94,132
Lincoln	42,534	10,791	18,916	13,290	5,401	18,965	18,545	16,466	12,661	17,929	7,303	607	544	263	1,539	725	186,482
Mercury	167,513	58,442	81,487	73,926	19,923	63,848	73,268	53,541	....	....	....	....	....	....	....	3,363	613,311
Nash	77,362	96,393	90,541	83,100	27,613	76,826	54,830	41,372	29,390	61,036	30,927	10,604	7,839	1,884	17,283	1,670	710,588
Oldsmobile	124,945	158,114	177,844	107,622	59,909	249,787	180,413	121,286	82,268	163,584	143,435	72,441	27,368	7,310	21,034	4,316	1,698,676
Packard	55,163	80,359	41,014	31,484	26,560	64,153	83,294	39,555	40,686	82,926	35,992	13,539	2,848	1,715	9,985	1,895	611,168
Plymouth	242,035	317,649	321,885	225,207	119,163	486,586	384,129	349,932	228,227	430,610	364,311	198,880	127,775	89,550	61,674	12,044	3,958,557
Pontiac	128,834	221,561	212,615	126,752	73,037	307,608	205,206	131,611	85,914	197,223	126,497	64,072	23,704	22,339	33,915	4,969	1,985,757
Studebaker	83,810	156,267	130,445	23,817	41,259	118,945	92,290	69,448	34,435	65,048	34,819	18,017	11,851	4,787	22,788	2,389	911,395
Willys	17,493	40,192	33,497	24,212	16,077	20,808	21,937	9,365	10,710	30,276	5,338	3,062	1,533	2,120	15,110	1,062	252,822
Miscellaneous	11,148	23,746	5,063	3,399	2,634	5,038	4,502	3,980	3,044	4,891	6,235	4,404	3,259	3,433	32,939	7,157	124,931
Total	2,638,026	2,980,927	3,065,637	2,046,674	1,006,337	4,004,581	3,089,109	2,328,487	1,621,176	3,074,764	2,495,486	1,334,612	762,088	434,753	1,737,780	112,273	32,730,718

*Data from Reuben H. Donnelley Corp. Complete details of Cars in Use by Makes, by States and by Year of Manufacture will be found on pages 96 to 103.

Trucks in Use by Makes and by Year of Manufacture*

(As of July 1, 1949)

Year of Manufacture	Autocar	Brockway	Chevrolet	Crosley	Diamond T	Divco	Dodge	Federal	Ford	FWD	GMC	Hurlson	International	Kenworth	Mack	Reo	Sterling	Studebaker	White	Willys	All Others	Total July 1, 1949
1949	691	614	161,421	413	2,485	1,798	53,203	528	84,920	313	39,132	......	42,621	129	2 596	1,848	86	49,508	3,651	16,554	5,962	488,471
1948	2,459	2,647	290,548	3,344	10,065	5,622	113,032	3,417	226,651	457	74,824	......	119,038	393	8,963	11,368	349	28,524	10,856	55,526	15,570	983,653
1947	4,072	3,939	208,193	2,002	10,447	5,836	121,034	5,518	174,674	928	48,660	......	115,416	471	12,233	10,462	513	40,109	13,213	31,586	14,856	824,162
1946	4,562	3,704	252,474	46	5,237	4,278	114,234	4,153	166,458	712	26,036	......	85,944	431	4,287	9,651	555	26,565	9,968	26,412	11,364	757,071
1945	2,243	1,986	34,230	10	3,141	1,851	19,656	1,880	43,145	322	12,607	......	28,304	373	4,692	2,667	410	3,152	6,521	2,504	3,714	173,418
1944	1,115	1,026	16,339	1	1,568	239	7,308	751	17,512	131	6,374	......	14,734	126	2,818	458	277	1,668	3,111	911	1,969	78,438
1943	188	69	2,741	6	208	75	1,952	305	7,432	32	2,716	......	3,576	29	376	136	32	661	1,238	1,784	1,097	24,653
1942	728	296	91,768	72	1,445	561	40,710	820	72,990	156	24,520	......	27,139	76	2,639	1,143	199	2,301	3,649	4,008	4,652	279,870
1941	2,394	2,049	196,611	85	5,303	2,650	80,936	1,116	168,667	264	43,076	780	82,343	226	8,360	1,462	389	5,482	8,123	2,779	16,162	629,248
1940	1,331	1,210	154,853	25	4,516	1,613	49,611	1,001	122,357	188	30,565	538	63,024	195	5,888	342	268	1,326	4,078	2,461	14,139	459,529
1939	1,294	1,289	121,139	7	3,558	1,290	41,016	853	90,589	172	21,832	389	51,923	108	4,815	685	229	1,813	2,833	1,147	11,665	358,675
1938	842	885	83,846	6	2,864	1,163	26,829	622	69,378	181	12,868	444	41,924	81	2,939	1,926	169	1,507	2,252	1,586	8,970	261,282
1937	1,115	1,011	135,479	9	4,656	717	44,061	916	126,624	279	27,452	1,611	44,258	100	3,282	2,155	201	3,562	3,405	1,123	17,250	419,276
1936	737	890	116,641	3	4,023	651	54,194	976	119,082	266	13,488	946	41,675	111	2,122	1,471	166	1,331	2,838	1,208	9,921	372,740
1935	407	381	67,207	3	2,378	212	26,832	580	88,126	137	3,066	345	24,216	50	883	1,436	83	700	1,212	737	5,832	224,843
1934	471	311	53,401	3	1,634	120	16,159	461	60,302	82	2,130	213	9,981	47	880	1,008	45	442	1,240	117	4,288	153,335
1933	298	134	28,880	1	1,014	88	6,960	207	21,120	49	974	73	5,875	43	598	441	25	367	290	100	3,509	71,024
Before '33	944	661	95,715	13	1,576	174	12,559	837	273,511	310	3,683	783	14,694	205	7,645	4,045	575	3,889	2,289	1,367	31,180	456,641
Unknown	614	731	20,508	46	1,032	375	7,188	500	19,993	53	5,196	3,717	9,644	30	1,538	926	100	1,719	1,856	1,366	13,677	90,805
Total	28,906	23,842	2,131,971	6,095	67,149	29,329	837,493	25,421	1,953,541	5,032	393,205	9,819	823,329	3,224	77,534	53,638	4,651	173,676	83,623	153,274	195,777	7,087,129

*—Data from Reuben H. Donnelley Corp.

Only 33% of Cars and 43% of Trucks* are Post-War Models

Cars in Use are 8.44 Years Old, Trucks 7.35

Number and Per Cent of Cars in Use, By Age Groups†

Age in Years	1949 Units	1949 % of Total Simple	1949 % of Total Cumul.	1948 Units	1948 % of Total Simple	1948 % of Total Cumul.	1947 Units	1947 % of Total Simple	1947 % of Total Cumul.	1941 Units	1941 % of Total Simple	1941 % of Total Cumul.
Under 1	2,638,026	8.09	8.09	1,673,487	5.63	5.63	1,367,295	5.01	5.01	3,239,741	11.79	11.79
1–2	2,980,927	9.14	17.23	3,100,367	10.43	16.06	2,056,130	7.54	12.55	3,111,943	11.32	23.11
2–3	3,065,637	9.40	26.63	2,048,095	6.89	22.95	0	......	......	2,401,802	8.74	31.85
3–4	2,046,674	6.27	32.90	0	......	......	0	......	......	1,732,560	6.30	38.15
4–5	0	......	......	0	......	......	0	......	......	3,481,335	12.67	50.82
5–6	0	......	......	0	......	......	1,065,336	3.90	16.45	3,175,362	11.55	62.37
6–7	0	......	......	1,012,305	3.41	26.36	4,085,413	14.97	31.42	2,138,773	7.78	70.15
7–8	1,006,337	3.09	35.99	4,004,717	13.48	39.84	3,113,260	11.41	42.83	1,590,608	5.79	75.94
8–9	4,004,581	12.28	48.27	3,093,315	10.41	50.25	2,378,796	8.72	51.55	1,120,066	4.08	80.02
9–10	3,089,109	9.47	57.74	2,345,276	7.89	58.14	1,679,027	6.15	57.70	735,440	2.68	82.70
10–11	2,326,487	7.13	64.87	1,661,648	5.59	63.73	3,303,955	12.11	69.81	1,211,262	4.41	87.11
11–12	1,621,176	4.97	69.84	3,186,089	10.72	74.45	2,789,570	10.22	80.03	1,204,897	4.38	91.49
12–13	3,074,764	9.43	79.27	2,657,338	8.94	83.39	1,592,404	5.84	85.87	1,278,055	4.65	96.14
13–14	2,495,486	7.65	86.92	1,489,556	5.01	88.40	967,340	3.55	89.42	560,760	2.04	98.18
14–15	1,334,612	4.09	91.01	885,957	2.98	91.38	567,768	2.08	91.50	501,988*	1.82	......
15–16	762,086	2.34	93.35	508,667	1.71	93.09	345,826	1.27	92.77	....	......	......
16–17	434,763	1.33	94.68	316,956	1.07	94.16	596,039	2.18	94.95	....	......	......
17 and older	1,737,780	5.32	......	1,731,288	5.84	......	1,377,057	5.05	......	....	......	......
Total	32,618,445	100.00	100.00	29,715,061	100.00	100.00	27,285,218	100.00	100.00	27,484,612	100.00	100.00
Age not known	112,273	......	......	252,658	......	......	236,177	......	......	215,399	......	......
Total in Use	32,730,718	......	......	29,967,719	......	......	27,521,395	......	......	27,700,011	......	......
Average age of known models	8.44 yrs.			8.73 yrs.			8.91 yrs.			5.33 yrs.		

* Includes cars in older age groups.   † Based on data from Reuben H. Donnelley Corp. and R. L. Polk & Co. as of July 1 of each year

Number and Per Cent of Trucks in Use, By Age Groups†

Age in Years	1949 Units	1949 % of Total Simple	1949 % of Total Cumul.	1948 Units	1948 % of Total Simple	1948 % of Total Cumul.	1947 Units	1947 % of Total Simple	1947 % of Total Cumul.	1941 Units	1941 % of Total Simple	1941 % of Total Cumul.
Under 1	468,471	6.70	6.70	525,189	8.06	8.06	366,847	6.27	6.27	467,000	10.43	10.43
1–2	983,653	14.06	20.76	832,635	12.79	20.85	785,853	13.44	19.71	552,000	12.32	22.75
2–3	824,162	11.78	32.54	769,516	11.82	32.67	188,901	3.23	22.94	438,000	9.78	32.53
3–4	757,071	10.82	43.36	185,614	2.85	35.52	89,542	1.53	24.47	334,000	7.46	39.99
4–5	173,416	2.48	45.84	85,481	1.31	36.83	25,020	.43	24.90	553,000	12.35	52.34
5–6	78,436	1.12	46.96	26,456	.41	37.24	310,574	5.31	30.21	515,000	11.50	63.84
6–7	24,653	.35	47.31	297,128	4.56	41.80	690,221	11.80	42.01	332,000	7.41	71.25
7–8	279,870	4.00	51.31	661,726	10.16	51.96	511,994	8.76	50.77	249,000	5.56	76.81
8–9	629,246	8.99	60.30	490,969	7.54	59.50	405,418	6.93	57.70	124,000	2.77	79.58
9–10	459,529	6.57	66.87	385,731	5.92	65.42	302,356	5.17	62.87	90,000	2.01	81.59
10–11	358,675	5.13	72.00	285,537	4.38	69.80	496,104	8.48	71.35	163,000	3.64	85.23
11–12	261,282	3.73	75.73	461,843	7.09	76.89	451,660	7.72	79.07	164,000	3.66	88.89
12–13	419,275	5.99	81.72	418,478	6.43	83.32	281,566	4.82	83.89	202,000	4.51	93.40
13–14	372,740	5.33	87.05	257,376	3.95	87.27	202,399	3.47	87.36	103,000	2.30	95.70
14–15	224,843	3.21	90.26	828,286*	12.73	......	738,457*	12.64	......	192,000*	4.30	......
15–16	153,335	2.19	92.45	....	......	......	....	......	......	....	......	......
16–17	71,024	1.02	93.47	....	......	......	....	......	......	....	......	......
17 and older	456,641	6.53	......	....	......	......	....	......	......	....	......	......
Total	6,996,322	100.00	100.00	6,511,965	100.00	100.00	5,846,912	100.00	100.00	4,479,000	100.00	100.00
Age not known	90,806	......	......	93,325	......	......	85,469	......	......	73,000	......	......
Total in Use	7,087,128	......	......	6,605,290	......	......	5,932,381	......	......	4,552,000	......	......
Average age of known models	7.35 yrs.			7.43 yrs.			7.86 yrs.			5.55 yrs.		

* Includes trucks in older age groups.   † Based on data from Reuben H. Donnelley Corp. and R. L. Polk & Co. as of July 1 of each year.

CARS IN USE BY MAKES, STATES

Make	Model	Ala.	Ariz.	Ark.	Calif.	Colo.	Conn.	Del.	D. C.	Fla.	Ga.	Idaho	Ill.	Ind.	Iowa	Kan.	Ky.	La.	Me.	Md.	Mass.	Mich.	Minn.	Miss.	Mo.	Mont.
BUICK	6 Mos. '49	1751	619	1039	15032	1679	2251	409	1388	3172	3068	703	16748	5608	3462	2532	2346	2437	856	3064	6160	19041	3963	1466	3911	783
	'48	1563	853	1008	18237	1726	3366	467	1254	3697	3054	863	15761	5695	3453	2531	2167	2429	951	2994	6742	15654	3908	1301	4432	773
	'47	1996	1147	1291	22284	2184	3888	600	1578	5290	3479	1021	20014	7306	3743	3066	2600	2963	1123	3688	8235	14721	4085	1587	5289	806
	'46	1203	746	727	12938	1266	2420	339	956	3011	1960	590	11167	4181	2114	1712	1511	1652	651	2090	4642	7710	2289	885	2798	505
	'45-'42	1015	862	904	8110	916	1386	170	463	2111	1347	425	5885	2315	1216	1105	1001	1260	397	1044	2279	4119	1460	734	1705	285
	'41	3384	2082	1706	40286	3711	6368	908	2540	8566	4514	1459	24415	10635	4849	4352	3922	4454	1534	4965	10524	18500	5794	2269	7222	1167
	'40	2170	1361	1077	34485	2525	5465	685	1832	5790	2871	948	17963	7359	3767	2845	2738	2600	1586	4202	9752	12866	4712	1334	8373	799
	'39	1567	907	801	22728	1865	4314	458	965	3731	1975	621	12219	4336	3064	2174	2014	1873	1013	2806	6823	7924	3606	959	3826	638
	'38	1063	800	490	17643	1408	3525	397	813	2840	1425	474	9471	3306	2234	1542	1391	1103	914	2434	5268	5275	2764	526	2754	456
	'37	1032	990	606	22297	2059	4461	499	748	3132	1439	613	11869	4601	2698	2001	1901	1086	1154	3090	6251	8679	3247	605	3454	601
	'36	623	603	367	15784	1456	2854	328	399	1984	930	364	6099	2931	1882	1486	1169	650	931	2014	4043	4338	2428	344	2209	381
	'35	162	140	86	5708	296	724	73	67	499	262	89	1374	1095	574	390	292	142	248	451	1197	887	746	95	587	80
	'34	102	120	78	2990	282	772	73	59	398	170	60	820	514	370	320	251	107	272	461	1312	628	582	77	413	93
	'33	57	68	22	1834	150	441	39	33	203	108	37	535	252	133	138	113	63	147	248	708	274	320	27	253	46
	Before '33	153	336	151	10648	878	1336	135	99	555	305	270	2134	1105	1546	892	375	139	663	836	1806	1522	1853	124	1217	210
	Unid.*	30	29	9	30	25	106	23	790	129	256	11	377	20	8	18	11	148	1	142	22	1514	28	60	286	8
	Total	17850	11365	9900	250914	22423	43696	5613	13980	45108	27163	8538	156851	61256	35103	27106	23802	23106	12443	34488	76584	123452	41765	12373	45737	7691
CADILLAC	6 Mos. '49	370	185	194	4191	364	637	102	402	1248	716	130	3858	1227	565	389	370	539	179	556	1258	4496	714	276	834	183
	'48	385	218	200	5474	397	982	115	437	1633	734	129	4571	1206	513	404	349	596	224	641	1394	3271	611	271	910	175
	'47	338	300	221	6645	425	1160	133	485	2001	743	151	5008	1345	474	318	415	463	257	731	1884	2863	602	209	1000	111
	'46	156	130	86	3473	214	573	60	229	983	430	64	2170	586	196	142	185	271	129	337	947	1082	277	90	439	46
	'45-'42	115	91	47	1629	157	333	34	115	564	216	28	1216	300	107	70	108	221	56	191	528	577	158	61	245	26
	'41	388	384	191	10942	576	1476	139	536	2240	824	111	4611	1223	369	318	353	683	284	772	2197	2017	655	199	1242	96
	'40	88	77	42	3193	105	288	32	130	463	146	27	950	271	68	49	102	114	61	180	548	319	150	16	213	21
	'39	70	69	38	2120	139	298	31	96	367	134	19	862	194	68	73	104	114	44	169	460	301	140	31	222	24
	'38	45	46	19	1607	80	210	20	67	302	83	10	545	129	45	51	55	68	35	114	333	219	74	17	155	12
	'37	51	49	25	1593	106	332	30	64	312	105	10	657	181	88	46	91	72	62	162	531	304	111	25	152	10
	'36	45	42	10	1450	60	228	19	42	218	66	20	398	129	82	42	55	44	48	107	375	193	101	8	120	8
	'35	4	16	2	639	15	45	3	6	36	14	7	47	36	12	9	19	9	9	23	81	42	21	5	29	1
	'34	2	7	3	300	15	57	3	8	30	12	1	42	18	10	4	17	6	6	23	86	27	13	.....	15	2
	'33	2	3	2	174	9	26	1	2	12	5	.....	22	6	11	4	12	7	8	8	31	10	13	2	11	2
	Before '33	9	41	7	1398	55	160	13	16	77	20	11	126	69	44	13	25	20	34	71	262	72	81	9	55	15
	Unid.*	7	8	2	21	3	29	2	71	34	31	.....	44	2	5	.....	1	25	2	16	10	114	5	6	37	.....
	Total	2045	1678	1095	44857	2720	6834	737	2708	10518	4279	718	25127	6922	2617	1834	2261	3252	1438	4103	10905	15907	3726	1225	5879	732
CHEVROLET	6 Mos. '49	6224	1138	2910	35883	3546	3112	1033	3106	7627	8275	1099	30604	13236	9261	8149	6299	6309	1783	6186	10137	43967	9709	3805	14067	1796
	'48	9653	2283	5986	45312	6017	8281	1742	4317	11418	11835	2654	44620	21393	16986	12226	9914	10995	3398	10420	16488	44691	16218	6662	22458	3203
	'47	9876	2590	5768	47851	5796	7582	1579	3617	11638	11605	2957	39564	20514	16509	12760	9551	10213	3000	9427	15764	37128	15255	6316	19931	3143
	'46	6514	1794	3853	31427	3969	4784	961	1857	7248	7663	1856	24540	11831	8831	7538	6369	5925	1945	5754	9340	19618	9272	4026	11418	1739
	'45-'42	5092	1291	2715	13831	2545	2793	488	671	4784	5705	1130	11334	7123	5765	4628	3983	4094	1252	2947	4580	11514	5448	2989	6167	987
	'41	18177	4360	9639	87339	10682	12579	2270	3482	16492	19226	4453	49776	30414	22373	19843	15354	15004	5023	13547	22657	47748	22720	10481	28167	3957
	'40	12341	3692	7136	72086	7891	10027	1833	2441	13201	14095	3690	39645	23806	18456	13995	12244	10652	4069	10952	18207	34198	18289	7525	24571	3319
	'39	10366	2774	6906	46798	6507	7241	1326	1383	9362	11023	2580	28771	15030	16413	11145	9428	8026	3266	7905	15215	22861	14195	6198	19070	2536
	'38	6011	2252	3867	39449	5346	5183	997	854	6504	6070	2101	23397	12805	14310	10777	7653	6111	2611	5930	10425	14515	14655	4271	15134	1840
	'37	10613	3722	5612	59654	6396	9821	1779	1165	10284	10439	3787	37159	24661	20090	15508	12660	7939	4323	10616	19406	34855	19841	6313	21788	3316
	'36	9284	3605	5072	64069	9244	9025	1597	958	9789	9642	3894	35842	26466	21269	17262	12559	8002	4371	9524	18336	31447	22565	6197	24401	3661
	'35	4025	1779	2761	38206	4306	4464	744	355	4405	5256	1962	14147	13097	10368	8578	6566	3261	2236	4451	9220	11586	11967	2803	11905	1968
	'34	2738	1396	1974	23530	3276	3275	542	156	3269	3438	1462	8478	7275	7118	6205	4379	2411	1830	3261	6744	6985	8674	2049	8124	1329
	'33	1480	830	1406	18913	2035	2454	363	99	1880	2224	726	5637	4127	4866	4094	3114	1666	1105	2189	4251	3717	5757	1200	5996	703
	Before '33	2674	2072	2520	44779	5827	3786	672	214	3500	3706	2150	15604	9990	16202	11752	6695	2498	2572	4023	5397	9550	19122	2289	17540	1990
	Unid.*	100	126	106	75	112	210	54	1381	352	1191	40	758	67	47	116	41	749	3	353	522	9357	187	262	2129	41
	Total	115068	36303	67933	668022	8587	94617	17980	28066	123733	131593	36541	409876	241635	208804	162570	126809	104055	42787	107485	186091	383335	213854	73374	252676	35596
CHRYSLER	6 Mos. '49	482	183	303	4865	578	478	117	386	1098	695	220	4288	1525	1186	908	698	897	187	879	1447	4205	1578	397	1010	296
	'48	879	467	617	7975	1155	1263	198	609	1996	1417	503	7270	2598	2003	1638	1215	1385	442	1494	2714	5187	2482	942	2353	478
	'47	816	511	498	8922	1157	1329	181	501	2094	1198	502	6967	2599	1856	1599	1166	1121	410	1369	2801	4990	2247	787	2114	493
	'46	639	381	356	7167	790	1062	140	301	1808	838	292	5182	1909	1152	856	782	696	294	1059	2299	3174	1435	435	1436	289
	'45-'42	244	225	151	3540	316	520	56	186	953	356	139	1871	814	393	337	307	410	95	421	769	1290	678	179	594	109
	'41	1036	1029	889	20754	1717	2518	289	974	3859	1556	574	9413	3941	1962	1647	1461	1447	553	2270	4023	8085	2796	688	2757	619
	'40	631	483	377	12500	961	1365	184	442	1928	790	350	4919	2475	1200	950	1001	718	403	1395	2361	3834	1598	406	1735	364
	'39	430	359	247	8087	636	982	137	334	1272	539	217	3696	1672	921	701	718	492	252	1034	1906	2302	1199	253	1201	251
	'38	244	247	170	5249	398	723	95	216	721	289	197	2271	963	595	502	566	381	204	710	1153	1227	883	185	853	170
	'37	323	498	263	8693	890	1370	189	270	1261	531	356	5212	2369	1154	947	1005	491	402	1436	2623	2712	1762	241	1377	378
	'36	168	224	113	5958	528	711	87	121	638	258	168	2050	1133	651	484	517	222	157	658	1108	1082	934	135	693	238
	'35	56	122	66	2782	229	347	43	50	254	123	104	869	561	394	280	297	60	97	319	686	513	558	60	398	140
	'34	40	52	43	1288	131	228	24	21	130	79	47	320	226	167	155	183	42	61	185	359	191	255	45	192	64
	'33	29	33	18	1021	94	177	18	18	115	87	19	218	157	73	75	156	34	44	142	269	138	165	23	178	26
	Before '33	96	176	79	8086	425	520	57	30	323	153	151	1019	702	686	481	386	143	231	432	594	686	1186	73	685	169
	Unid.*	9	15	11	10	7	28	7	309	36	89	2	112	13	7	13	1	48	.....	65	10	908	12	20	100	6
	Total	6129	8007	3903	103907	10012	13821	1822	4828	18487	8967	3843	58677	23857	14400	11471	10443	8267	3832	13868	25100	38292	19788	4849	17656	4089
CROSLEY	6 Mos. '49	39	37	26	335	24	68	7	25	177	151	5	812	272	97	144	85	131	41	86	211	265	82	74	138	11
	'48	111	162	104	1476	24	271	33	102	838	374	42	2316	1116	441	539	407	316	104	379	835	758	422	200	763	27
	'47	267	93	85	1571	97	288	28	104	874	246	75	677	854	184	203	378	160	119	357	438	748	294	103	403	35
	'46	79	6	13	85	21	10	4	6	103	51	16	119	29	11	14	46	54	21	46	77	60	9	40	40	3
	'45-'42	11	3	4	33	4	23	1	19	61	22	.....	37	20	1	8	13	13	10	22	88	27	12	11	7	1
	'41	14	1	.....	51	1	43	1	7	78	14	1	57	35	4	5	11	12	9	18	61	17	9	4	5	.....
	'40	4	.....	.....	10	2	9	.....	2	16	6	2	19	6		2	5	5	8	1	13	8	4	5	9	.....
	'39	2	.....	6	29	4	17	.....	1	18	2	2	29	23	19	7	9	4	5	6	22	15	21	5	12	3
	'38	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	'37	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	'36	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	'35	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	'34	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	'33	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Before '33	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	Unid.*	1	4	1	3	1	5	.....	23	13	17	1	15	21	3	3	3	7	.....	6	3	14	1	9	8	1
	Total	526	306	239	3593	178	734	74	209	2176	883	144	3881	2376	790	925	957	702	317	921	1728	1908	864	451	1385	81
DE SOTO	6 Mos. '49	386	174	206	4776	300	420	90	334	806	530	139	3862	1230	648	491	442	380	160	654	1483	3818	831	188	831	151
	'48	586	378	322	8156	520	1087	144	442	1417	1091	362	5996	1926	1187	849	670	806	409	1042	2812	4557	1260	391	1538	308
	'47	465	397	285	8728	534	1009	133	384	1531	833	310	5210	1872	1044	764	631	521	390	980	2472	3803	1115	263	1434	276
	'46	468	272	271	6783	491	893	113	316	1306	713	267	4093	1520	788	568	507	457	279	818	1959	2809	993	224	1171	221
	'45-'42	227	182	117	2854	207	376	33	147	581	313	97	1252	657	280	288	208	338	89	242	622	882	457	118	422	58
	'41	773	536	317	14229	867	1626	157	556	2094	967	446	5878	2970	1089	1005	729	811	371	1218	3033	3380	1548	320	2050	215
	'40	507	301	218	9060	511	1204	129	316	1161	541	260	4269	1985	684	631	588	493	295	937	1814	2501	1157	222	1446	201
	'39	410	262	186	6445	456	1030	97	225	852	414	226	3208	1507	567	459	484	335	232	706	1758	1789	982	176	1289	121
	'38	238	498	96	4633	315	700	64	77	539	280	150	2058	944	391	426	333	245	178	482	994	1007	750	128	810	86
	'37	339	378	205	7903	690	1424	130	164	895	440	266	4581	2310	817	827	681	300	365	938	2035	2493	1585	144	1534	177
	'36	96	207	75	5414	295	582	57	50	402	173	131	1750	1028	472	377	314	135	110	411	738	832	673	55	615	123
	'35	43	86	50	2783	163	307	24	31	158	82	76	666	526	285	191	172	53	65	179	352	349	345	19	312	67
	'34	8	43	13	761	51	71	7	2	73	26	28	143	110	53	73	39	40	27	46	94	101	86	9	79	28
	'33	20	36	26	1209	66	139	8	4	59	20	17	244	194	60	76	89	35	39	64	159	112	100	6	184	15
	Before '33	45	119	40	3340	150	377	26	15	171	67	88	720	674	248	226	224	102	92	199	265	444	348	27	511	75
	Unid.*	9	11	7	11	9	39	5	224	26	65	3	82	5	2	7	9	40	2	37	9	553	9	14	95	3
	Total	4620	3580	2433	87084	5825	11284	1217	3287	12070	6545	2866	44012	19458	8615	7258	6100	5091	3103	8913	20405	30110	12227	2304	14421	2123

Unid.*—Unidentified as to year of manufacture.

Data from the Reuben H. Donnelley Corp. are as of July 1, 1949.

AND BY YEAR OF MANUFACTURE

Model	Neb.	Nev.	N. H.	N. J.	N.M.	N. Y.	N. C.	N. D.	Ohio	Okla.	Ore.	Pa.	R. I.	S. C.	S. D.	Tenn.	Tex.	Utah	Vt.	Va.	Wash.	W.Va.	Wis.	Wyo.	Totals
BUICK																									
6 Mos. '49	1997	249	701	7426	787	23124	3180	536	12585	2064	2389	15072	1059	1436	888	2412	8822	909	431	2685	3220	1121	1907	444	198737
'48	1622	341	728	7617	849	21033	2962	605	13538	2657	2463	14146	1080	1590	806	2225	9175	877	472	3927	3430	1052	3802	587	202098
'47	1788	382	671	10114	791	26383	3643	746	16848	2784	3117	18998	1348	1650	862	2659	11520	1171	524	4083	4082	1917	4872	611	243593
'46	930	211	412	6210	476	15175	2223	388	9455	1555	1868	8992	866	934	462	1551	6488	681	325	2250	2540	1175	2628	358	138113
'45-'42	579	144	202	3034	376	7007	1446	237	5191	965	1259	4591	456	636	265	1300	5487	528	160	883	1786	759	1472	259	80822
'41	2324	571	1004	14177	1255	32535	5764	758	23700	3969	5345	21174	2104	2885	1000	4507	17473	1982	751	8211	7452	3063	6590	699	345478
'40	1672	388	1026	12378	870	28613	3561	615	17778	2795	3060	18573	1872	1715	746	2604	9597	1172	746	4113	4524	2257	5459	605	263648
'39	1295	232	679	8881	525	19818	2690	423	11874	2190	2260	12009	1406	1121	618	2014	6318	796	538	2891	3379	1499	4149	443	181267
'38	1042	175	554	8238	403	17280	1943	316	8025	1632	1688	10364	934	731	488	1331	4963	650	438	2035	2352	1212	3036	257	140130
'37	1233	281	672	9959	468	21090	1915	299	11892	1916	2460	13869	1140	778	571	1357	4549	777	500	2111	3447	1459	4223	387	176462
'36	842	159	588	6304	288	15503	1045	204	6467	1126	1480	9664	876	472	475	837	2643	488	458	1347	2009	953	2724	266	114824
'35	258	23	174	1602	55	3978	344	103	1544	667	294	2132	219	146	140	252	634	114	104	539	427	227	814	64	31127
'34	222	31	166	1647	52	3571	252	52	1242	263	296	1877	238	102	67	151	423	82	128	238	438	170	593	50	23653
'33	99	26	75	1086	20	2693	116	30	651	117	163	1091	142	44	34	63	203	41	52	112	255	84	365	25	13816
Before '33	1137	126	326	2567	135	6639	338	294	2348	554	961	3890	464	198	357	249	777	209	322	377	1600	287	1989	157	85370
Unid.*	22	5	1	51	19	92	4	4	86	38		254	51	82	12	105	126	4	3	9	4	3	75	8	6138
Total	17182	3344	7079	101271	7140	244534	31446	5580	143222	25292	29103	154596	14254	14520	7771	23617	90677	10461	5959	32769	40805	17245	44477	5389	2215061
CADILLAC																									
6 Mos. '49	338	122	118	1680	126	6506	626	86	2402	437	415	2872	298	251	105	514	1697	173	90	474	692	172	437	80	44993
'48	293	138	134	2218	105	6169	661	82	2841	583	426	3011	290	279	69	540	2385	161	88	576	593	205	599	93	48398
'47	238	190	125	2568	104	7444	723	66	3068	541	414	3451	378	286	64	604	2521	182	88	612	659	332	788	89	53797
'46	95	87	77	1240	64	3407	339	28	1483	285	235	1515	169	147	33	303	1164	93	49	295	352	172	304	32	25265
'45-'42	58	64	26	703	29	1731	214	8	739	94	167	881	89	89	13	149	723	53	11	87	225	80	168	9	13502
'41	189	212	144	2905	133	6844	670	34	3265	571	554	3389	435	319	69	655	2719	226	100	729	688	339	701	67	59953
'40	31	26	37	697	26	1592	122	1	673	150	95	766	106	39	9	126	524	46	17	171	148	64	196	13	13304
'39	30	41	45	646	39	1482	106	5	716	105	102	771	106	55	7	126	393	38	19	141	158	48	193	12	11582
'38	24	15	18	475	12	1021	81	6	403	82	74	460	66	34	6	77	240	34	10	82	105	37	87	8	7800
'37	31	34	43	686	20	1432	85	6	621	69	89	751	82	49	6	93	294	28	31	92	157	66	140	13	10031
'36	28	20	20	479	16	978	69	3	435	65	62	473	64	28	16	78	169	19	19	56	130	49	90	9	7283
'35	5	3	4	87	2	199	7	1	78	15	21	101	11	5		19	22	10	4	17	34	6	24	3	1808
'34	6	3	4	94	5	169	11	1	72	12	26	94	9	5	1	10	22	5	2	10	30	3	20	1	1302
'33	3	1	3	54		115	7		37	3	14	55	7		3	10	15	3	2	2	12	6	7	1	743
Before '33	24	13	17	349	6	581	33	10	177	51	62	295	90	14	9	26	58	31	28	29	84	20	58	8	4796
Unid.*	6		1	26	1	22		1	16	2		54	5	6	1	10	36		1	1		1	5	1	671
Total	1399	969	816	14809	688	39691	3754	340	17024	3074	2796	18939	2207	1606	420	3337	13126	1102	559	3374	4263	1600	3797	439	304248
CHEVROLET																									
6 Mos. '49	5496	410	1551	11351	1640	32095	7966	1616	29762	6978	5218	26679	1961	4706	2220	8066	22870	1746	749	8937	7639	2550	5621	673	435499
'48	8775	721	2118	19520	2790	50017	13417	3907	45031	12529	8103	44302	3161	8217	4192	12139	43816	2890	1496	14124	10445	4472	11264	1943	678599
'47	9174	651	1881	18162	3006	44889	13847	4060	40833	12699	8224	39232	3182	8277	4654	11649	48442	2918	1331	13297	10365	6657	13973	1931	653177
'46	5140	400	1145	11494	1938	27799	9529	2363	24209	6983	5125	23797	1903	5388	2720	7317	42091	1801	865	8141	6659	4530	8181	1167	410546
'45-'42	3295	307	486	5809	1497	13186	6418	1385	14000	3762	3292	11943	881	3788	1536	5139	20175	1230	420	2720	4244	2885	4332	631	227570
'41	13719	1151	2837	27034	4688	58087	25236	6574	61595	16763	14223	53332	5332	14863	6154	20196	67412	5048	1974	18447	19416	10202	22040	2593	978294
'40	9735	777	2449	22652	3337	48523	18332	4049	46686	13485	9954	43915	4159	10870	4456	13823	46784	4131	1766	15454	13363	8490	18307	1931	755942
'39	8360	570	2070	16422	2634	34807	15520	2934	29685	10416	7164	31340	3178	8465	3870	10541	30991	2911	1313	11533	9982	6081	14201	1499	551690
'38	7109	499	1367	13536	2011	28238	10843	2787	21222	8968	5900	24364	2198	4915	3243	7179	29042	2350	1082	8211	8081	4529	12829	1159	434748
'37	9806	721	2859	21966	2774	47720	17436	3484	45681	11694	10427	45613	4223	8311	4613	11433	36074	4267	1859	13369	14135	8910	21591	1697	714210
'36	11222	725	2790	20247	2734	47547	13739	3270	44626	12989	11072	40560	3928	7556	4896	10971	36070	4091	1798	12827	14691	9128	24151	1898	712495
'35	5494	392	1687	9651	1276	22271	8232	2170	18655	7207	4683	17638	2172	4365	2356	5812	16974	2112	896	7702	6655	3899	11530	937	341984
'34	3799	277	1219	7569	978	17214	5610	1502	12372	4293	3548	13438	1502	2848	1630	3497	11693	1529	607	4067	5039	2353	8572	603	235719
'33	2722	183	906	5378	505	12861	3199	856	7464	2943	2313	7893	1135	2296	947	2259	9737	789	438	2431	3678	1624	4952	353	159498
Before '33	10591	513	1563	8101	1270	23120	4406	3230	16467	6083	6044	17720	1193	3510	3654	5132	16339	1698	1260	5597	7270	3398	15237	877	381373
Unid.*	148	7	10	132	33	300	31	34	332	209	6	1301	147	204	43	451	287	33	3	93	19	33	236	12	22480
Total	114589	8304	26938	219024	33113	508672	173760	43232	458620	138001	105304	443067	40255	98598	50994	135604	478787	39549	17855	149947	141728	79305	197407	20343	7873851
CHRYSLER																									
6 Mos. '49	786	91	134	1952	249	5667	696	256	3328	622	769	5152	275	320	320	679	2523	286	107	787	1091	410	492	112	55538
'48	1157	228	308	3878	485	9424	1220	543	6216	1356	1230	7982	508	658	545	1214	4957	494	202	1782	1700	635	1724	349	93133
'47	1217	228	245	3445	361	9198	1191	480	6059	1209	1226	7570	464	551	510	1095	4987	476	202	1595	1523	975	2049	233	95388
'46	626	168	193	2761	249	7261	863	249	4742	765	964	5872	400	429	282	726	2956	298	134	1184	1189	762	1311	204	69361
'45-'42	230	85	47	1333	127	3025	484	72	2196	422	444	2019	155	215	80	314	1602	200	51	294	598	283	525	77	23817
'41	918	313	276	6208	549	14096	2213	292	10332	1445	2513	12077	779	907	421	1607	5403	687	250	2164	3217	1397	2549	343	145519
'40	580	164	202	3650	287	8265	1213	175	6062	877	1311	7718	503	522	248	895	2746	385	167	1413	1530	889	1514	195	84850
'39	428	96	161	2846	215	6597	904	102	4218	589	1006	5553	393	341	200	587	1835	282	124	863	1120	594	1227	144	60259
'38	335	60	129	2141	117	4934	537	80	2559	440	637	3771	234	201	139	478	1367	180	105	605	774	419	833	99	40366
'37	485	122	253	3595	212	8517	818	162	6823	658	1228	8442	602	342	272	632	1776	412	190	899	1783	1034	1841	173	77795
'36	295	73	106	1591	106	4175	392	104	2678	415	644	3887	304	162	145	336	859	201	132	476	819	450	798	79	38261
'35	170	29	68	866	49	2113	203	62	1278	217	362	1864	162	89	80	140	453	114	89	209	607	206	581	51	19330
'34	68	13	39	447	27	1083	109	28	667	101	207	1177	84	56	21	98	251	59	45	119	302	154	245	25	9942
'33	34	9	26	449	20	1144	72	6	467	58	134	760	77	30	9	43	141	27	22	87	174	95	179	9	7389
Before '33	525	67	140	1141	65	3020	225	198	1381	242	674	2599	200	107	203	178	459	103	162	282	894	276	939	72	28783
Unid.*	16	4	1	35	1	49		2	35	31		143	24	15	9	34	32	5		6	2	4	14		2300
Total	7650	1750	2328	36338	3119	88568	11140	2809	58840	9447	13349	76596	5164	4947	3481	9056	32328	4187	1982	12754	17294	8583	16801	2237	882839
CROSLEY																									
6 Mos. '49	31		22	265	29	431	49	9	339	24	71	204	16	30	12	136	200	47	19	137	100	47	40	3	5494
'48	129	8	98	839	91	2106	238	27	2015	228	424	1168	106	133	78	638	1371	165	95	478	290	263	304	22	23510
'47	115	23	55	963	30	1443	334	28	1421	118	238	964	55	193	33	512	740	41	33	600	191	305	143	38	17295
'46	10	1	13	39	6	113	56	5	28	47	4	181	14	58	13	110	45		[illegible]	97	23	38	17	2	1898
'45-'42	1		5	48	2	108	14		31	6	29	56	13	23	1	15	45		1	52	7	10	4	1	904
'41			5	45	3	128	14	2	70	9	11	56	17	7	4	14	22		2	35	16	16	11		945
'40	1			4	1	20			18	3		9	4			10	19			5	6	3	2		243
'39	7			18	2	38	10		24	7	1	17	1	6	3	3	24	2	1	16	1	4	12	1	459
'38																									
'37																									
'36																									
'35																									
'34																									
'33																									
Before '33																									
Unid.*	3		1	10	1	11	2	1	9	2		8	3			11	14			2			3		244
Total	297	32	199	2231	165	4388	719	72	3955	444	778	2063	229	500	144	1449	2481	255	164	1422	636	676	536	67	50892
DE SOTO																									
6 Mos. '49	322	63	129	1501	116	5520	595	174	2802	403	592	4173	268	291	171	551	1503	229	102	577	913	259	418	98	45097
'48	489	142	272	2601	229	9818	990	350	5072	862	1030	6481	389	500	336	798	2750	387	164	1414	1493	369	1339	180	78858
'47	483	134	218	2514	208	11176	859	200	4999	705	1065	5989	353	429	242	689	2605	368	147	1125	1471	560	1660	168	73779
'46	391	98	192	2024	163	7482	816	169	4011	589	883	5357	255	328	180	571	2061	323	141	949	1184	501	1255	138	59350
'45-'42	125	42	55	698	113	1816	313	68	1598	257	333	1342	69	200	62	300	1166	161	44	224	523	173	394	48	21171
'41	456	208	229	3532	255	8161	1065	214	7154	759	1702	7169	446	507	199	901	2735	606	180	1358	2675	753	1929	189	91155
'40	302	87	243	2646	130	6658	670	129	5069	577	1053	5816	337	322	163	641	1692	398	132	1024	1403	577	1450	121	83029
'39	272	88	180	2268	111	5497	521	98	3932	404	800	4080	268	263	134	500	1299	341	103	739	1154	454	1148	107	49013
'38	188	41	128	1504	98	3592	315	67	2412	310	512	2773	128	131	75	314	888	207	86	451	707	325	690	65	32108
'37	373	115	194	2974	141	6589	510	137	5993	562	1116	5668	428	234	168	578	1135	441	157	759	1591	697	1633	94	63908
'36	164	54	76	1121	68	2683	199	46	2110	248	654	2703	219	88	94	190	473	288	74	399	905	389	814	58	29208
'35	115	28	36	589	28	1353	116	44	1007	134	321	1048	117	36	69	109	255	126	40	171	433	150	367	27	14110
'34	38	14	21	135	14	337	22	12	228	44	124	270	32	13	11	39	78	42	11	37	170	35	83	11	3832
'33	27	7	17	234	7	677	28	8	435	39	146	339	63	15	8	35	61	34	11	52	201	85	188	8	5708
Before '33	166	35	78	522	27	1474	92	57	1162	109	463	1309	94	78	62	88	333	60	60	193	695	152	821	31	18440
Unid.*	13	2	1	19	5	26	2		63	13	1	103	17	3	8	45	20	7	1	8	5	3	46	5	1890
Total	3924	1158	2069	24882	1709	72858	7113	1773	48107	6018	10795	54620	3483	3438	1982	6347	19024	4018	1453	9478	15493	5482	13343	1343	645262

Unid.*—Unidentified as to year of manufacture.

Data from the Reuben H. Donnelley Corp. are as of July 1, 1949.

CARS IN USE BY MAKES, STATES

Make	Model	Ala.	Ariz.	Ark.	Calif.	Colo.	Conn.	Del.	D. C.	Fla.	Ga.	Idaho	Ill.	Ind.
DODGE	6 Mos. '49	1003	349	469	8772	864	1044	237	1064	2050	1390	396	9486	3089
	'48	1829	677	1308	15374	1675	2990	443	1820	3997	2890	760	15053	5245
	'47	1792	861	1031	16089	1938	3281	473	1657	4449	2942	820	16266	6095
	'46	1402	646	812	13083	1302	2315	324	928	3220	2136	639	10993	4117
	'45-'42	920	392	634	4963	692	927	114	403	1650	1110	284	3604	1715
	'41	2683	1263	1270	23590	2311	3514	446	1499	5479	3041	918	13518	8243
	'40	2236	976	1084	20000	1727	2837	373	1062	3949	2470	742	12035	5463
	'39	2051	812	1071	18658	1798	2784	337	969	3313	2226	632	10789	4310
	'38	996	461	493	11102	862	1750	205	470	1782	1035	346	5589	2451
	'37	1988	1213	1140	24194	2533	4840	566	834	3664	2339	941	16390	7279
	'36	1390	1122	924	24689	2220	3691	420	648	2711	1700	867	11866	6048
	'35	803	516	426	15348	1094	1657	174	118	1151	634	516	4126	3556
	'34	245	201	185	6097	423	750	84	87	567	332	192	1331	1008
	'33	113	136	135	4019	348	696	56	62	371	106	116	1145	887
	Before '33	254	276	242	8064	901	793	75	60	422	273	329	2036	1420
	Unid.*	17	22	26	21	18	96	17	882	94	213	7	291	17
	Total	19422	9921	11270	215672	20894	33866	4334	12753	38760	24897	8807	134617	58923
FORD	6 Mos. '49	18130	3233	5068	30244	5802	5567	1448	3063	14085	14107	2542	48085	20458
	'48	3728	1030	2430	30804	2219	2139	472	1439	5424	6135	1034	14480	6291
	'47	6890	1764	3848	40413	3932	3459	828	2002	9692	9295	1860	24021	11194
	'46	7477	2138	5082	26456	4322	3861	868	1823	9143	11890	1625	23648	10075
	'45-'42	3032	865	2139	9544	1567	1238	282	365	4256	4758	638	6990	3515
	'41	12990	3298	8228	62226	7847	6457	1232	2159	15164	19121	2868	29803	17048
	'40	9606	2362	6036	44248	6442	5270	1000	1150	11096	16919	2231	23351	14035
	'39	7257	1812	4846	34323	4640	3962	764	1098	8166	11708	1841	19471	10748
	'38	3872	1414	2833	27528	3684	3207	578	802	5841	6265	1333	14814	8748
	'37	8096	3009	6686	47131	7210	7923	1381	1159	11027	11957	2023	33527	22357
	'36	6887	3028	7052	54760	7192	6970	1212	999	10283	14558	2857	25758	17831
	'35	4867	2163	4503	47049	4861	5030	787	590	6639	7523	2062	16806	14120
	'34	3083	1379	2824	26896	3264	2603	447	239	3785	6258	1234	6949	5943
	'33	608	448	651	12257	1007	845	131	73	1229	1135	425	2481	2218
	Before '33	14415	5886	15273	116343	11140	7227	1587	457	15717	21389	5040	39037	29693
	Unid.*	144	241	90	49	67	209	52	1564	329	1456	25	686	42
	Total	103671	33860	77171	600273	74296	66203	13049	19782	130975	164475	30329	329717	194216
FRAZER	6 Mos. '49	29	43	192	498	132	65	38	46	308	262	166	1912	696
	'48	640	174	351	2966	534	344	84	158	836	514	429	4861	1847
	'47	640	321	348	5323	565	637	126	249	1230	720	507	4877	1956
	'46													
	'45-'42													
	'41													
	'40													
	'39													
	'38													
	'37													
	'36													
	'35													
	'34													
	'33													
	Before '33													
	Unid.*	26	8	19	127	7	33	4	20	28	30	7	111	69
	Total	1435	543	910	8942	1238	1079	252	473	2402	1526	1106	11881	4572
GRAHAM	6 Mos. '49													
	'48													
	'47													
	'46													
	'45-'42													
	'41	3	5	4	185	10	9			25	4	4	88	17
	'40	4	2	2	320	10	13	1	1	37	3	5	83	38
	'39	19	29	6	490	34	71	2	9	95	8	8	186	97
	'38	11	15	2	677	23	30	1	3	71	7	16	156	60
	'37	20	65	33	1195	104	343	10	25	202	48	64	557	136
	'36	21	63	11	1232	116	158	4	3	104	12	32	321	190
	'35	8	36	3	752	66	100		6	78	14	20	160	97
	'34	4	8	1	434	22	29		4	38	14	9	61	48
	'33	1	4	2	218	32	21	1	3	14	3	7	44	29
	Before '33	14	34	17	1235	97	64	6	2	51	15	21	220	113
	Unid.*	1	2	3	10	2	11		10	15	4	3	13	8
	Total	106	283	84	6656	516	849	30	66	731	132	189	1867	633
HUDSON	6 Mos. '49	944	456	663	6360	1620	601	151	624	1947	1525	518	8573	3390
	'48	1080	380	634	8634	820	1421	190	616	1970	1508	476	7263	3171
	'47	895	374	470	7727	590	1116	139	417	1670	1148	415	5614	2484
	'46	931	409	396	7769	640	1097	131	403	1782	979	425	5532	2559
	'45-'42	652	293	204	3019	428	417	48	129	892	589	317	2333	1238
	'41	1088	519	356	9625	761	1277	140	393	2046	1013	453	5848	3175
	'40	854	409	332	8286	755	1084	127	302	1770	810	421	5806	3277
	'39	454	249	166	4749	541	565	72	193	1038	529	223	2862	1383
	'38	309	154	93	3235	538	457	56	93	865	396	261	1846	1071
	'37	796	410	137	5490	948	1095	139	177	1539	810	497	4623	2708
	'36	473	299	112	4746	877	835	88	144	1163	406	372	2854	2290
	'35	182	162	48	2903	387	392	31	47	370	158	195	958	1230
	'34	94	86	31	1402	219	270	21	28	221	108	65	401	426
	'33	22	24	9	561	86	137	8	12	90	40	17	143	156
	Before '33	61	88	21	2306	312	321	30	32	289	67	70	862	618
	Unid.*	20	14	6	10	17	34	6	246	45	76	6	76	8
	Total	8775	4331	3675	78723	9537	11149	1376	3856	17897	10100	4731	86383	29182
HUPMOBILE	6 Mos. '49	1								2				1
	'48									2				2
	'47			1	2					2				1
	'46				1					1			2	
	'45-'42				1				1	1				4
	'41	2	2		16	8	1		3	19	5	1	8	17
	'40			1	29		4			8	1	1	1	1
	'39		2		75	7	12		6	9	2	1	86	22
	'38	8	10	1	91	18	21		14	8	11		92	25
	'37	2	1		28	3				2		2	29	29
	'36	3	5	4	97	20	45	1	4	8	2	10	70	30
	'35	3	13	4	351	38	78	3	14	21	13	14	107	63
	'34	2	3	1	181	7	42	1	5	19	6	1	53	28
	'33	2	2		116	6	27	1	2	11	5	1	20	16
	Before '33	19	29	12	1149	81	147	7	20	80	36	17	313	126
	Unid.*			4	22	1	2		8	1	3		2	3
	Total	30	67	29	2159	186	379	13	75	104	84	40	783	368

Make	Model	Iowa	Kan.	Ky.	La.	Me.	Md.	Mass.	Mich.	Minn.	Miss.	Mo.	Mont.
DODGE	6 Mos. '49	1828	1254	1229	1177	500	1683	3312	9328	2200	611	2153	479
	'48	3615	2509	2078	2765	1137	3113	6431	11981	3824	1311	4500	875
	'47	3733	2787	2362	2473	1203	3322	6957	12183	3840	1097	4557	967
	'46	2452	1806	1692	1600	757	2276	4699	7981	2718	866	3212	629
	'45-'42	1044	906	768	1265	326	806	1907	3077	977	512	1270	222
	'41	3574	2880	2822	2732	1055	3134	7376	12022	3426	1165	4594	752
	'40	2950	2261	2275	2130	926	2614	6229	9686	3132	961	4555	617
	'39	3077	1955	2132	2117	683	2358	6096	8024	3057	779	4842	541
	'38	1670	1331	1367	1197	618	1440	3461	3118	2012	447	2106	352
	'37	3720	3271	3757	1913	1388	3963	8871	11018	4872	784	5086	718
	'36	3397	2540	2930	1512	1070	2950	6616	8341	3886	592	4269	789
	'35	2068	1433	1567	616	429	1232	2734	2804	2142	298	2276	457
	'34	728	887	700	290	287	886	1478	1026	731	178	954	191
	'33	486	435	527	167	190	408	957	859	549	89	963	129
	Before '33	2000	1315	761	405	449	520	852	1437	1886	162	1614	290
	Unid.*	7	25	11	180		126	23	3319	38	53	316	7
	Total	36339	27297	26675	22569	11226	30416	67896	105204	39290	9795	47088	8004
FORD	6 Mos. '49	17490	11736	9627	12317	2769	7213	18414	63533	16159	7042	19193	3188
	'48	6048	4057	3412	5219	973	2369	6223	16060	5112	2967	6123	1043
	'47	6783	7122	5501	7434	1726	4124	9744	27285	8099	4657	9448	1648
	'46	10032	7622	6167	9063	1955	4320	10827	25717	10511	6375	9955	1873
	'45-'42	3519	2709	2519	3616	864	1318	3270	8228	3844	2721	3390	864
	'41	16182	12817	9257	14162	2830	6159	14559	40290	16746	10044	15326	2828
	'40	14033	9348	7386	9789	2568	4990	12196	28454	13231	6969	12287	2254
	'39	12439	7606	6442	7943	2070	3790	9894	21210	11134	5420	10071	1781
	'38	9961	6196	4280	5120	1810	2887	8043	12165	10617	3073	7505	1420
	'37	17156	12730	10892	7823	3556	6875	17756	40021	21969	5548	16505	2757
	'36	15262	11265	10134	7348	3374	6016	15743	29520	17130	5764	14328	2994
	'35	13476	9429	7444	3748	2406	3933	10515	17477	15605	3464	12216	2344
	'34	5799	8539	4402	2963	1604	2230	6060	8556	6964	2403	6953	1107
	'33	2204	1766	1391	1133	502	672	1516	2676	3227	537	2825	432
	Before '33	38379	28506	21444	11623	8594	7916	9732	34698	40870	9698	33480	4848
	Unid.*	40	1456	27	769	4	274	39	12538	177	346	1474	29
	Total	196801	139932	110525	110110	34396	65065	151531	388428	209985	77256	181079	31206
FRAZER	6 Mos. '49	772	464	232	360	96	193	176	1537	601	167	334	154
	'48	2270	1239	558	749	123	433	593	3464	1265	342	1308	368
	'47	1334	1290	712	743	296	647	1172	4052	1081	347	1153	355
	'46												
	'45-'42												
	'41												
	'40												
	'39												
	'38												
	'37												
	'36												
	'35												
	'34												
	'33												
	Before '33												
	Unid.*	17	4	27	26	3	19	53	63	5	15	39	8
	Total	4393	2997	1529	1960	517	1292	1994	9116	2952	871	2834	884
GRAHAM	6 Mos. '49												
	'48												
	'47												
	'46												
	'45-'42												
	'41	5	1	7	4	6	3	19	37	8		12	3
	'40	24	11	6	3	17	8	95	41	19	1	18	7
	'39	49	39	10	12	55	27	149	144	53	5	84	8
	'38	45	29	19	7	21	17	90	91	54		45	3
	'37	168	83	66	26	82	87	466	391	247	14	139	26
	'36	117	35	51	14	42	41	208	222	192	6	117	25
	'35	65	49	37	11	52	37	112	116	128	1	79	22
	'34	13	25	18	5	18	14	68	51	52	3	46	3
	'33	11	12	10	1	15	13	30	25	53	1	14	8
	Before '33	138	87	34	13	47	47	141	142	306	5	142	26
	Unid.*	7		3		1	2	7	181	3	3	8	
	Total	642	371	261	96	356	296	1394	1441	1115	39	704	128
HUDSON	6 Mos. '49	1932	1630	1085	1511	479	1122	1612	5597	2395	708	1887	601
	'48	1899	1635	1105	1356	565	1417	2840	7960	2103	732	2221	441
	'47	1445	1160	880	787	450	1032	2448	5999	1384	444	1765	367
	'46	1485	1108	908	711	497	974	2311	5849	1415	408	1583	372
	'45-'42	802	699	427	328	274	352	959	2609	613	263	695	202
	'41	1679	1189	744	862	590	1050	2536	7021	1303	296	1532	345
	'40	1738	907	789	668	484	953	2257	5504	1275	298	1432	351
	'39	909	735	424	441	376	536	1426	2650	797	154	879	168
	'38	786	772	379	311	317	411	1215	1650	828	100	621	156
	'37	1564	1656	797	515	636	1038	2532	5603	1761	238	1322	372
	'36	1340	1169	621	255	488	661	2182	3368	1611	155	927	501
	'35	714	705	277	101	211	237	876	1193	813	66	434	274
	'34	362	335	124	76	230	155	705	530	395	21	228	98
	'33	106	148	46	19	90	68	380	271	101	3	118	18
	Before '33	547	381	207	62	306	228	505	807	701	44	392	84
	Unid.*	9	14	6	54	2	41	23	1406	14	19	80	7
	Total	17306	14332	6819	7879	6075	10272	24787	58037	17509	3949	16116	4349
HUPMOBILE	6 Mos. '49	1											
	'48							1	1		1	2	
	'47								3		1	1	
	'46			1					2				
	'45-'42	1							2		2		
	'41	5	2	6			2	3	29		2	3	
	'40	1	1	1		1		2	7	1	1	3	
	'39	8	2	4	7		2	35	90	57	1	6	5
	'38	18	5	5	9	3	6	42	72	40	1	3	2
	'37	2		1	1	1		2	10	4	1	2	
	'36	30	6	16	7	4	12	37	19	42	1	15	9
	'35	62	32	20	9	12	29	101	44	102	1	42	14
	'34	18	5	24	4	6	13	76	36	62	1	18	6
	'33	12	5	12		6	13	56	11	52		11	3
	Before '33	245	159	77	20	47	91	224	233	381	14	145	20
	Unid.*	3		1			1	13	85	6		1	1
	Total	466	217	168	57	80	169	881	614	747	27	252	60

Unid.*—Unidentified as to year of manufacture.

Data from the Reuben H. Donnelley Corp. are as of July 1, 1949.

AND YEAR OF MANUFACTURE—*continued*

	Model	Neb.	Nev.	N.H.	N.J.	N.M.	N.Y.	N.C.	N.D.	Ohio	Okla.	Ore.	Pa.	R.I.	S.C.	S.D.	Tenn.	Tex.	Utah	Vt.	Va.	Wash.	W.Va.	Wis.	Wyo.	Totals
DODGE	6 Mos. '49	925	101	438	4003	411	13386	1540	321	7347	1009	1337	8813	650	860	486	1279	4339	504	291	1468	1954	675	1236	207	109228
	'48	1492	279	843	7793	654	21288	2923	712	12622	2250	2178	15912	1113	1591	1037	2489	9067	834	479	3492	3126	1214	3270	484	195351
	'47	1618	298	725	8826	861	25960	3378	622	14844	2307	2307	16791	1089	1560	1066	2572	10649	936	464	3728	3189	2051	4335	483	215628
	'46	1127	177	474	8033	534	18024	2396	497	9719	1536	1667	11743	853	1143	657	1850	6876	662	368	2516	2442	1485	3106	335	146866
	'45-'42	489	101	165	2186	286	4911	1184	244	4117	782	1127	4073	223	599	270	1181	4077	375	145	755	1475	656	1034	158	61076
	'41	1457	306	810	8547	814	20683	3545	606	16202	2539	3496	15521	1251	1714	821	3341	11249	1017	437	4250	5168	2111	4247	490	221436
	'40	1311	230	576	7383	589	16666	2935	499	13471	2139	2196	13111	995	1328	756	2608	8987	988	413	3429	3684	1918	3868	386	183856
	'39	1276	196	623	7046	525	17445	2670	407	11696	1975	2061	11152	1108	1261	684	2372	7836	780	406	2946	3374	1409	3825	380	168867
	'38	751	113	356	4665	320	10800	1390	243	6059	1250	1102	6953	583	638	384	1406	3994	489	273	1626	1796	1038	2300	199	95385
	'37	1624	308	884	11296	667	25074	2834	527	17852	2460	3351	20033	1698	1344	787	3196	7323	1237	630	3015	4738	2578	6688	486	237691
	'36	1589	241	841	8649	511	19542	1934	413	14460	2104	3171	15347	1323	948	683	2384	8079	1248	491	2700	4322	2206	5690	438	183203
	'35	922	138	338	3595	231	8876	876	292	6046	1311	1505	6480	638	505	396	1013	2355	679	231	1419	2313	984	2968	242	92231
	'34	313	49	166	1670	96	4375	389	84	2630	526	732	3218	266	212	136	471	953	275	129	473	1199	606	1074	83	38362
	'33	229	33	96	1356	55	3812	265	43	2288	384	580	2064	142	141	78	220	595	142	66	345	916	380	867	67	29049
	Before '33	1104	111	195	1178	149	3674	413	307	2507	789	1094	3184	224	190	425	564	1382	228	215	867	1487	559	1720	156	49287
	Unid.*	48	5	3	42	6	74	7	1	82	42	2	282	39	24	13	103	40	3	3	19	6	8	31	3	6709
	Total	16275	2686	7113	84273	6489	212580	28679	5820	141740	23410	27996	154677	12206	13870	8883	27040	84800	10377	5041	32784	41187	19863	46368	4567	2044218
FORD	6 Mos. '49	9897	756	1196	15830	2610	46993	15067	3674	39894	5632	7567	36879	2559	8448	3659	12753	39838	3219	1180	7728	12274	4858	7384	1484	641789
	'48	3660	256	1186	5170	1026	14416	5586	1383	12730	6362	2896	11013	813	3769	1659	4425	18636	1096	475	11663	4378	2165	4526	567	290113
	'47	6494	507	1089	9436	1707	25938	10622	2537	22780	8673	4689	20393	1360	5786	2427	6587	28842	1859	791	11356	7620	3856	7049	1097	405342
	'46	5720	434	1056	9394	1752	24798	12976	2794	20678	8071	4453	20362	1080	7022	3013	8170	32261	1758	693	8792	6580	4041	8019	1181	408482
	'45-'42	2176	187	363	2844	891	6342	4878	1171	7404	3374	1682	6123	378	2724	1049	3859	15129	717	242	2166	2803	1263	2716	512	146419
	'41	9811	730	1722	12384	3152	28386	23046	4925	35263	15180	7386	27222	2512	13200	4795	13623	55918	3304	1149	13266	10628	8771	13515	1910	649035
	'40	8262	573	1638	9986	2179	24045	18306	3449	27049	12147	6883	21607	2208	11866	3713	10380	42894	2472	1108	10873	7686	4608	10394	1348	510158
	'39	7192	429	1384	7544	1722	19337	13488	2617	21195	10399	4371	16297	1870	8878	3370	8160	31710	2185	886	9052	5758	3678	9445	1124	402849
	'38	5802	374	963	6700	1205	17276	8440	2298	13485	7957	3461	12760	1546	5086	2590	4534	22444	1623	706	6250	4377	2552	8430	889	295534
	'37	10096	606	2223	14937	2109	41522	14282	3730	44620	12839	8304	35429	3266	9590	5381	9923	33056	3354	1447	10792	11308	7104	19816	1587	634304
	'36	9605	718	2217	11736	2127	36165	14265	3236	35342	13127	8849	28674	2752	11936	4457	10287	32840	3721	1469	9014	12549	6433	16106	1586	579540
	'35	7888	542	1580	8899	1375	26443	9258	3196	20880	10377	5615	18849	1781	6791	3661	6271	20583	2406	1087	7962	8118	4386	13731	1131	410223
	'34	3864	346	1028	4339	890	13044	5551	1370	10824	5801	3224	10607	906	5164	1516	4068	13231	1380	674	3822	4483	2652	8801	611	224700
	'33	1541	113	347	1506	384	5125	1619	606	3606	1998	1412	2984	278	1365	548	1229	4515	475	208	1293	1864	940	2417	299	79049
	Before '33	25142	1896	3097	14679	4227	37067	25682	11437	43901	23974	17656	33249	2487	23292	10832	17436	51158	4461	2549	15111	22107	11011	30292	2526	971670
	Unid.*	129	13	7	82	12	894	44	21	174	181	13	1103	98	138	84	590	544	13	4	58	8	37	121	12	26515
	Total	115781	8192	21096	135041	27370	368793	183019	48445	358404	147992	67253	303552	26574	125065	52654	122296	443390	34059	14667	129096	122322	66234	158801	17774	6044702
FRAZER	6 Mos. '49	255	24	27	296	92	1217	338	169	1103	106	298	1248	49	106	268	204	868	120	38	167	293	125	266	86	17386
	'48	661	95	103	1204	235	3168	757	262	2706	659	737	2218	120	192	422	468	2118	231	88	911	789	373	1207	190	46413
	'47	723	88	147	1899	260	4836	1112	371	3321	678	1027	3035	211	305	848	564	2389	277	120	1184	1104	630	1223	232	57123
	'46																									
	'45-'42																									
	'41																									
	'40																									
	'39																									
	'38																									
	'37																									
	'36																									
	'35																									
	'34																									
	'33																									
	Before '33																									
	Unid.*	118	4	8	88	6	135	10	8	40	46	2	34	18	7	11	22	87	5	8	33	2		46	3	1496
	Total	1757	211	295	3467	593	9356	2215	807	7170	1489	2034	6535	398	702	1247	1258	5462	633	251	2295	2247	1137	2742	490	122429
GRAHAM	6 Mos. '49																									
	'48																									
	'47																									
	'46																									
	'45-'42																									
	'41	3	7	1	22	2	19	2		80	3	41	55	3	1		5	18	4		3	48	7	9	1	802
	'40	9	4	3	27	3	55		2	132	4	30	83	8	2		1	13	7	2	18	30	18	32	5	1267
	'39	86	10	10	124	1	299	5	4	327	17	103	294	16	4	4	14	57	15	1	27	73	52	101	7	3338
	'38	20	7	5	83	5	161	5	6	240	10	112	168	7	2	10	12	42	29	2	22	96	22	75	8	2539
	'37	32	32	47	376	8	683	44	7	1046	46	373	880	46	16	16	46	106	96	23	88	382	148	267	16	9387
	'36	30	21	30	167	1	456	22	17	465	49	264	441	28	8	8	28	64	90	11	44	242	86	166	23	6088
	'35	25	8	16	171	2	437	33	12	375	32	259	400	19	3	11	28	53	50	9	44	184	39	125	6	4402
	'34	16	5	15	42	1	197	10	2	158	15	90	160	8	4	2	19	17	26	8	29	72	15	52	2	1955
	'33	9	1	13	60		177	6		96	11	45	145	4	2		6	17	14	11	12	49	11	28	1	1296
	Before '33	66	17	20	227	1	491	30	22	323	36	202	468	13	9	32	36	72	46	32	41	196	63	272	12	5746
	Unid.*	2			6	1	15		1	8	3	1	4	2	2	2	4	14		2	1		1	1	1	368
	Total	300	112	100	1306	25	2990	157	73	3259	227	1820	3116	183	63	86	186	475	376	101	309	1341	462	1128	78	37188
HUDSON	6 Mos. '49	770	120	266	2678	288	6978	1338	317	5111	675	1119	5820	345	682	470	1342	3861	600	181	1289	1202	495	778	258	85113
	'48	917	165	351	3648	298	9179	1706	353	6892	1330	1256	7055	550	868	361	1458	4824	508	212	2114	1747	668	1811	233	100757
	'47	553	72	274	2473	224	6361	1246	203	4753	814	939	6321	380	780	236	1000	3390	351	161	1336	1594	773	1723	191	76368
	'46	528	96	271	2010	188	6102	1299	194	4882	814	1035	5200	421	782	279	863	3166	404	172	1289	1621	714	1788	183	74975
	'45-'42	306	47	106	882	100	1963	774	51	2171	401	514	1700	117	801	85	468	1583	371	62	343	832	332	869	114	33483
	'41	482	118	304	2621	179	4965	1286	108	6004	643	1300	6148	446	878	180	628	2582	498	208	1163	2338	833	2276	232	81149
	'40	454	78	321	2194	167	4862	1261	148	6090	675	943	4964	383	822	173	726	2449	385	192	1046	1600	814	2183	205	74141
	'39	267	53	234	1347	99	3215	789	80	2727	525	521	2610	246	466	117	367	1207	278	130	625	899	351	1069	95	40866
	'38	273	43	180	1142	75	2790	465	100	2046	408	595	2116	144	306	107	319	1142	198	105	431	938	333	895	96	32166
	'37	633	90	321	2403	157	6017	665	199	6433	660	1356	5843	399	571	187	690	2010	492	274	764	2375	811	2094	217	73129
	'36	490	75	241	1478	116	4420	465	151	4292	605	1250	3726	333	297	206	455	1322	421	212	566	2093	603	1717	174	53634
	'35	232	31	131	600	63	1997	234	71	1748	295	583	1309	137	133	135	195	503	171	91	321	930	238	912	107	24086
	'34	168	14	114	403	22	1302	178	40	815	147	261	862	82	85	59	75	248	98	86	171	441	155	480	50	12983
	'33	49	4	60	168	8	629	61	3	353	30	95	377	42	28	9	25	87	28	48	60	148	70	152	5	5181
	Before '33	177	20	134	687	25	1910	117	68	1117	117	335	1197	104	53	79	121	246	134	140	112	451	168	892	46	17670
	Unid.*	11		1	19	5	55	1		33	12		87	19	19	3	30	13	4		3	2	2	14	1	2575
	Total	6200	1026	3309	24753	2014	62745	12084	2091	55269	8141	12101	83336	4148	7273	2665	8963	28643	5141	2283	11633	19207	7250	19643	2207	788256
HUPMOBILE	6 Mos. '49				1														1							7
	'48						3	1										1								14
	'47						1							1			1									14
	'46						1							1										1		10
	'45-'42						1	3									1									17
	'41	1	1		7		6	5		34	1	7	7		1	1	4	2			7	7	4	2		229
	'40				1		4			1		1		1			3	1	1		3	4	1	1		88
	'39	2	1	2	19		109	1	3	28	3	25	8	6		1	6	10	7	1	3	21	3	7		702
	'38	3		3	34		98	3		40	9	41	28	8	1	1	16	11	5		13	48	6	15	1	867
	'37	3		1	2		3		1	13	2	1	9				2				4	10				171
	'36	14		8	44		84			67	8	17	102	11	3	3	12	17	1	1	6	28	8	11	1	941
	'35	34	2	7	101	1	195	12	4	110	16	45	195	31	5	5	14	37	8	3	25	72	22	82	6	2192
	'34	6	1	3	42	3	135	4	3	104	17	18	97	14	13	4	10	10	6	6	20	29	10	38		1202
	'33	7		7	52	1	160		2	48	3	13	108	12	5	1	3	3	5	2	6	9	5	13		853
	Before '33	64	11	44	366	5	785	36	17	451	43	134	722	57	20	48	43	99	22	57	107	245	64	117	12	7263
	Unid.*			1	3		9		1	9			15		2			1		1	1			9		177
	Total	134	16	78	674	10	1994	65	31	903	102	302	1291	142	50	64	113	192	56	71	196	462	128	266	20	14785

Unid.*—Unidentified as to year of manufacture.

Data from the Reuben H. Donnelley Corp. are as of July 1, 1949.

CARS IN USE BY MAKES, STATES

Make	Model	Ala.	Ariz.	Ark.	Calif.	Colo.	Conn.	Del.	D. C.	Fla.	Ga.	Idaho	Ill.	Ind.	Iowa	Kan.	Ky.	La.	Me.	Md.	Mass.	Mich.	Minn.	Miss.	Mo.	Mont.
KAISER	6 Mos. '49	692	113	577	1416	356	247	118	148	913	760	317	4563	1944	1872	1048	644	1029	316	646	1029	4323	1737	406	1243	375
	'48	1010	297	759	6152	596	704	208	357	1555	1005	518	9087	3431	3147	1954	1147	1343	286	1138	1505	6701	2472	705	2542	517
	'47	750	324	480	5297	494	701	160	275	1436	996	361	4528	1911	1092	1116	863	884	358	828	1542	4755	1196	465	1277	538
	'46																									
	'45-'42																									
	'41																									
	'40																									
	'39																									
	'38																									
	'37																									
	'36																									
	'35																									
	'34																									
	'33																									
	Before '33																									
	Unid.*	36	4	30	276	7	4	1	29	51	45	19	122	55	6	12	25	58	5	10	33	113	13	38	63	12
	Total	2386	738	1846	12141	1452	1656	477	809	3955	2806	1215	18300	7341	6117	4130	2879	3314	945	2622	4109	15892	5418	1614	5125	1412
LA SALLE	6 Mos. '49																									
	'48																									
	'47																									
	'46																									
	'45-'42																									
	'41																									
	'40	129	105	59	2502	197	511	77	150	649	304	31	1582	449	142	113	197	137	139	345	935	882	294	63	388	37
	'39	117	121	64	3064	194	510	60	166	607	250	41	1297	374	172	115	161	138	134	265	850	794	282	62	368	44
	'38	76	64	27	2058	96	316	41	97	353	153	28	765	276	104	82	106	96	87	177	620	443	149	31	238	24
	'37	140	144	77	2745	210	639	77	116	614	210	51	1523	541	213	157	246	130	158	347	1172	889	304	78	420	34
	'36	36	56	27	1674	91	183	29	42	202	72	11	463	181	73	63	72	43	57	129	417	287	123	16	170	19
	'35	8	30	10	1112	40	120	12	17	103	38	9	179	100	51	48	39	31	28	58	214	131	70	8	91	14
	'34	6	14	6	346	22	33	5	3	44	14	7	55	29	22	12	17	11	18	19	91	44	20	5	38	1
	'33	5	2		172	5	21	3	1	10	3	1	18	10	5	4	5	3	3	13	81	12	17	2	10	2
	Before '33	17	18	5	815	36	146	11	8	36	17	6	115	46	27	7	14	7	23	49	129	59	60	10	41	13
	Unid.*	7	3	3	41	5	16	2	63	42	33	2	45	10	1	1	3	5	4	11	5	103	3	6	39	
	Total	532	557	277	15519	896	2496	317	663	2660	1094	187	6042	2016	810	602	860	801	651	1413	4514	3844	1321	279	1797	188
LINCOLN	6 Mos. '49	619	215	287	1782	475	622	104	251	1784	963	213	3848	1084	667	748	494	700	166	557	1061	2740	756	435	781	207
	'48	69	42	58	3022	61	130	17	69	377	136	29	644	150	97	89	58	145	32	95	275	361	85	80	172	28
	'47	174	114	119	2841	175	319	42	123	745	277	75	1551	398	195	190	110	286	88	230	635	870	212	123	330	58
	'46	101	75	62	1440	134	226	30	91	506	212	36	1062	270	161	154	125	236	55	166	477	717	204	96	289	41
	'45-'42	65	43	25	700	55	70	10	36	241	102	16	379	106	58	72	51	157	16	55	165	308	107	60	111	18
	'41	169	138	106	2944	221	354	39	122	766	269	66	1042	356	221	278	154	343	94	213	660	721	301	153	513	72
	'40	146	166	86	3351	273	314	38	104	736	234	88	1010	353	227	262	177	287	78	193	609	821	295	120	326	65
	'39	144	139	83	3063	236	240	29	72	576	244	82	809	331	175	192	187	264	78	159	548	782	263	125	305	84
	'38	111	120	70	2620	151	154	23	51	437	159	75	621	249	160	173	132	151	61	122	392	592	247	67	241	47
	'37	141	173	115	3031	249	246	35	66	535	237	81	839	381	272	211	204	173	132	185	600	840	416	113	307	128
	'36	30	63	32	1719	125	96	13	25	217	29	58	294	192	104	79	62	50	27	71	229	263	163	18	118	66
	'35	1	2	2	188	9	16	1	3	6	4		16	9	3	3	6	5	4	6	29	18	10	1	10	11
	'34	2	3	5	95	8	3	1	1	20	5		18	6	1	3	4	3	4	6	35	12	11	2	4	1
	'33	1	1		66	2	8		2	3	2		10	3	2	1	1		3	2	10	3	5		8	2
	Before '33	5	12	6	416	19	34	4	5	43	16	6	57	20	19	15	19	17	12	19	62	29	42	3	14	9
	Unid.*	8	7	4	8	6	22	3	82	32	32	3	24	27	6	5	1	16	3	10	9	186	5	8	25	
	Total	1796	1313	1059	27286	2199	2854	387	1103	7024	2921	828	12224	3935	2368	2475	1785	2833	853	2088	6796	9263	3122	1404	3584	837
MERCURY	6 Mos. '49	2305	807	1092	7484	1879	1959	401	976	4812	3151	724	13741	4529	3849	3187	2082	2740	678	1918	4840	13705	3728	1449	3815	865
	'48	494	194	377	10703	559	517	95	266	1284	913	206	3708	1403	810	772	649	854	162	460	1457	3497	760	444	1109	194
	'47	748	492	561	11075	959	1070	167	278	1952	1358	400	5535	1826	1308	1181	717	1086	341	799	2791	5708	1422	616	1708	468
	'46	950	413	625	7206	978	1075	143	236	1874	1733	368	4850	1683	1440	1054	842	1330	247	685	2130	4789	1654	728	1816	415
	'45-'42	328	145	221	1635	286	251	32	53	665	636	118	1151	449	368	284	220	524	94	152	414	1325	465	285	472	112
	'41	1404	605	747	10213	1168	970	142	259	2347	2069	502	4235	1902	1431	1331	909	1557	280	680	1793	5345	1923	852	1934	448
	'40	916	448	543	10000	1175	981	127	226	1847	1556	424	3970	1798	1353	1163	779	1063	345	606	1926	4933	1775	579	1649	372
	'39	635	288	394	7370	842	812	96	191	1334	1107	257	2906	1135	1115	865	560	766	311	468	1288	3595	1345	398	1148	255
	'38																									
	'37																									
	'36																									
	'35																									
	'34																									
	'33																									
	Before '33																									
	Unid.*	38	27	16	560	33	61	4	128	94	160	17	149	135	40	22	23	106	3	24	42	414	27	44	140	10
	Total	7818	3419	4576	66246	7879	7696	1207	2615	16209	12683	3016	40245	14860	11714	9859	6781	10036	2491	5794	16681	43311	13099	5394	13591	3139
NASH	6 Mos. '49	788	383	506	4861	684	844	152	441	1382	1065	411	7087	2493	1501	1235	886	927	389	1095	2376	5700	2231	638	1910	481
	'48	927	488	648	6705	859	1913	202	533	1836	1408	460	7340	2683	1504	1334	904	1152	528	1446	3763	6635	2123	650	2297	491
	'47	887	478	553	7878	813	1727	179	415	1691	1252	503	6739	2281	1378	1313	886	1083	441	1285	3294	5667	2035	672	2144	433
	'46	816	465	568	7184	760	1489	159	368	1763	1075	371	6459	1980	1179	1085	847	1002	476	1139	2768	4955	1876	623	1934	385
	'45-'42	329	179	156	2291	266	386	41	60	659	429	133	2894	765	478	481	274	301	183	297	787	1579	784	215	562	217
	'41	416	408	356	7262	749	1255	138	203	1408	701	421	6833	2152	1241	1117	693	665	416	988	2245	4352	2156	320	1958	448
	'40	390	301	235	8037	625	883	106	145	1169	510	291	5070	1635	952	694	552	450	315	755	1645	2457	1564	248	1617	337
	'39	303	218	177	4377	441	626	79	123	794	390	196	3744	1184	747	473	418	244	296	562	1630	1644	1122	174	1393	280
	'38	193	135	87	2593	308	522	57	83	524	231	118	2387	591	625	403	290	211	194	417	1255	931	1112	113	839	170
	'37	277	277	133	4716	855	1157	127	6	735	363	315	6063	1520	1155	744	568	382	449	915	2721	2315	1698	180	1093	415
	'36	150	199	84	3451	532	625	54	46	372	195	162	2249	525	770	489	267	241	237	395	1445	894	923	97	623	310
	'35	27	61	23	2502	155	208	14	13	116	42	41	539	281	174	91	90	73	70	99	422	209	254	33	265	108
	'34	19	39	17	921	122	230	17	8	90	38	24	279	146	150	129	69	83	111	125	498	111	210	26	180	72
	'33	7	14	7	319	26	64	2	3	21	10	5	83	27	23	14	13	21	35	19	115	27	45	3	32	9
	Before '33	38	73	30	2740	273	357	31	26	135	44	81	711	319	591	354	131	109	234	228	502	341	630	63	445	121
	Unid.*	8	8	6	10	17	41	3	171	18	66	3	116	13	4	2	6	34	2	31	7	554	20	21	135	2
	Total	5664	3726	3565	62847	7485	12327	1361	2644	12713	7819	3535	58593	18595	12472	9958	6900	6978	4375	9796	25474	38271	18843	4054	17487	4279
OLDSMOBILE	6 Mos. '49	1135	367	587	10533	814	1135	380	999	2126	2158	361	9560	3639	1903	1498	1467	1379	651	1774	4675	12955	2275	775	2478	589
	'48	1354	546	843	12033	1052	2417	483	1072	2885	2062	579	12059	4812	2504	2317	1815	1932	827	2244	6563	13045	2935	892	3856	689
	'47	1326	628	880	15078	1410	2990	553	1143	3333	2199	664	13656	5276	2808	2403	2043	1881	856	2550	8048	12677	2911	837	4225	689
	'46	812	440	523	9170	911	1876	338	627	2167	1348	464	8063	2989	1640	1477	1282	1119	555	1572	4959	6350	1797	537	2468	400
	'45-'42	553	348	300	4836	608	1121	170	325	1397	845	238	4195	1812	822	874	757	837	444	779	2541	3376	1050	374	1424	186
	'41	1982	1317	1218	26223	2371	4748	765	1449	5409	2998	955	16671	7218	3422	3432	2900	2737	1503	3526	11325	12723	4178	1208	5752	921
	'40	1358	845	824	21350	1547	3382	574	772	3547	2129	695	11644	5360	2481	2397	2147	1696	1146	2642	8224	8361	2948	862	4382	673
	'39	980	647	606	14504	1261	2458	386	401	2153	1406	440	7322	3164	1887	1755	1454	1195	804	1784	5904	4824	2123	556	2939	494
	'38	606	427	348	10227	865	1742	243	260	1554	896	341	4545	2370	1244	1150	1016	793	616	1131	3803	2928	1521	353	2005	316
	'37	1033	932	602	19251	1870	3090	515	469	2728	1529	613	11677	5318	2447	2226	1925	1032	1145	2376	7012	7315	3033	541	3533	582
	'36	692	715	496	17471	1552	2806	456	396	2195	1120	507	8347	4055	2330	1811	1678	890	1021	2100	6654	5988	2713	349	3287	456
	'35	301	396	261	11521	844	1334	212	156	978	514	265	3399	2659	1484	1179	871	346	522	982	3055	2781	1899	163	1764	283
	'34	106	159	119	3423	370	565	79	50	325	178	123	1075	858	529	459	341	129	234	373	1151	1055	720	54	798	105
	'33	20	37	28	797	65	180	21	6	62	23	27	293	199	145	95	68	24	77	108	333	247	209	10	174	40
	Before '33	67	113	57	2361	325	379	58	40	202	119	98	907	744	539	357	189	79	242	281	507	837	952	55	628	87
	Unid.*	17	26	11	25	14	72	25	578	84	184	3	221	31	4	12	16	117		124	16	1469	19	26	193	9
	Total	12322	7943	7703	178812	15879	30295	5258	8743	31145	19710	6373	113834	50504	26249	23442	19969	16176	10643	24348	74791	97607	31310	7603	39926	6489

Unid.*—Unidentified as to year of manufacture. Data from the Reuben H. Donnelley Corp. are as of July 1, 1949.

AND YEAR OF MANUFACTURE—*continued*

Model	Neb.	Nev.	N.H.	N.J.	N.M.	N.Y.	N.C.	N.D.	Ohio	Okla.	Ore.	Pa.
KAISER												
6 Mos. '49	720	23	123	988	211	3975	825	421	3262	276	639	3717
'48	1324	117	208	3088	452	6799	1503	503	5547	1175	1234	5124
'47	674	117	194	1976	309	4854	1233	304	3541	771	806	3701
'46												
'45-'42												
'41												
'40												
'39												
'38												
'37												
'36												
'35												
'34												
'33												
Before '33												
Unid.*	13	4	9	37	10	79	10	1	63	66	2	17
Total	2731	261	534	6099	982	15707	3571	1229	12413	2268	2684	12559
LA SALLE												
6 Mos. '49												
'48												
'47												
'46												
'45-'42												
'41												
'40	46	51	70	1236	51	2780	236	11	1290	158	190	1697
'39	51	46	71	1092	52	2610	240	15	1083	188	249	1060
'38	44	26	46	723	32	1625	146	9	699	126	122	740
'37	69	48	80	1374	85	3135	230	27	1459	182	268	1536
'36	31	14	31	451	16	1079	62	7	436	64	121	683
'35	18	7	16	210	11	533	34	7	250	47	63	287
'34	9	4	4	102	6	231	12	1	94	17	22	84
'33	1	2	2	74	2	140	2		53	4	9	70
Before '33	12	10	18	213	9	439	24	4	102	25	42	218
Unid.*	1	2		26	4	53	1		20	4	1	16
Total	282	210	338	5601	238	12625	987	81	5486	815	1087	6383
LINCOLN												
6 Mos. '49	373	118	52	1764	245	4624	914	127	2264	295	605	3019
'48	54	29	80	397	42	884	102	21	370	372	77	397
'47	92	51	68	874	58	2232	226	30	923	232	218	1086
'46	106	30	32	646	62	1613	181	29	726	188	156	797
'45-'42	34	19	13	208	33	387	79	9	266	80	93	271
'41	145	61	56	753	80	1706	317	40	896	297	322	1068
'40	167	69	65	678	92	1600	274	44	952	304	288	980
'39	137	58	53	530	79	1456	255	37	759	297	310	831
'38	126	28	37	430	56	1084	187	34	606	202	234	633
'37	157	72	58	580	89	1700	221	56	964	292	396	1063
'36	70	20	29	234	37	655	64	25	322	120	175	392
'35		2		34		62	8	2	22	8	6	38
'34	1		2	46	1	120	4	1	29	2	9	32
'33	1	2	2	18	1	40	8	1	11	3	4	15
Before '33	15	2	6	85	3	177	9	6	51	11	28	108
Unid.*	4	3	4	7	3	29	1		36	5		25
Total	1481	564	557	7284	681	16269	2850	482	9197	2706	2921	10755
MERCURY												
6 Mos. '49	1995	396	285	8051	860	15266	3477	806	9954	1328	2547	11838
'48	383	104	290	1515	220	3380	897	203	2876	2006	432	2687
'47	752	209	234	2808	284	6218	1498	383	4881	1427	924	4583
'46	792	118	161	2455	365	5590	1847	440	4100	1250	806	3653
'45-'42	228	43	39	493	115	982	547	110	1014	446	236	735
'41	945	157	246	2156	503	4601	2355	455	4789	1734	1168	3446
'40	886	125	224	1910	365	4754	1816	379	4069	1334	975	3115
'39	647	89	187	1393	222	3680	1368	289	2952	1015	755	2496
'38												
'37												
'36												
'35												
'34												
'33												
Before '33												
Unid.*	37	3	7	56	8	153	4	8	47	123	4	50
Total	6665	1244	1673	18837	2942	44624	13807	3075	34682	10663	7847	32602
NASH												
6 Mos. '49	615	103	307	2152	370	7687	1050	364	4596	749	1149	6473
'48	674	109	362	3285	350	9614	1304	377	6519	1209	1200	8109
'47	562	83	341	3048	322	8642	1232	316	5797	1153	1153	7084
'46	587	81	299	2841	280	8072	1136	331	5730	939	1092	6298
'45-'42	242	52	58	706	102	1608	333	191	1738	312	586	1628
'41	492	87	208	2774	285	5582	677	333	6197	705	1778	8435
'40	384	70	156	2067	188	3693	439	180	4461	623	1145	4275
'39	311	49	175	1562	98	3275	344	153	2786	460	831	3080
'38	252	45	136	1476	68	2856	250	129	1570	268	652	2029
'37	419	104	299	2451	117	4963	298	183	4182	421	1268	5531
'36	373	83	198	959	80	2903	130	102	1754	279	898	2469
'35	103	20	74	321	14	815	38	50	438	101	175	557
'34	65	18	68	402	9	1064	38	16	403	63	133	651
'33	12	1	23	78	3	327	8	3	73	8	35	145
Before '33	263	24	117	750	38	2149	58	121	738	112	292	1267
Unid.*	8	5	8	13	1	39	1	6	26	7	1	111
Total	5342	934	2829	24893	2283	63289	7332	2845	47008	7400	12388	56142
OLDSMOBILE												
6 Mos. '49	970	156	461	4079	385	14417	1880	307	7726	1256	1388	9476
'48	1149	183	557	5729	450	17937	2283	499	10496	1806	1717	11555
'47	1298	157	582	6647	520	20253	2608	486	11918	1937	1953	13345
'46	657	108	393	4453	318	12489	1674	307	6961	1146	1276	6844
'45-'42	364	71	201	2242	222	6042	1020	179	4167	617	843	4022
'41	1499	313	880	10507	860	24774	3862	548	17283	2883	3414	17161
'40	1031	206	731	7903	656	18114	2608	404	12149	2270	2257	13051
'39	860	130	634	5756	423	12812	1691	277	7452	1642	1551	8870
'38	562	104	432	4164	271	9708	1057	193	4877	1138	1070	5090
'37	1100	186	712	7617	451	17579	1785	335	11121	1986	2071	11692
'36	1107	172	742	6981	323	16325	1220	272	9960	1550	1954	10424
'35	656	115	357	3255	197	7533	616	223	4636	1084	903	4918
'34	275	32	137	1235	69	3487	212	93	1915	350	375	1983
'33	61	8	57	453	16	1272	47	18	396	56	86	592
Before '33	354	22	130	917	26	2668	85	103	1397	159	332	1441
Unid.*	17	5	7	55	2	85		3	93	35	1	444
Total	11960	1968	6093	71903	5189	185495	22646	4247	112547	19815	21211	122108

Model	R.I.	S.C.	S.D.	Tenn.	Tex.	Utah	Vt.	Va.	Wash.	W.Va.	Wis.	Wyo.	Totals
KAISER													
6 Mos. '49	192	306	488	666	1911	365	112	540	765	407	687	139	48469
'48	300	518	750	1131	3539	417	167	1896	1181	661	2388	268	89416
'47	301	581	461	852	2844	254	164	1222	1030	649	1222	198	60646
'46													
'45-'42													
'41													
'40													
'39													
'38													
'37													
'36													
'35													
'34													
'33													
Before '33													
Unid.*	8	17	19	49	78	3	7	58	4	5	13	6	1645
Total	801	1422	1718	2690	6372	1029	450	3706	2980	1722	4290	631	199378
LA SALLE													
6 Mos. '49													
'48													
'47													
'46													
'45-'42													
'41													
'40	137	75	34	201	628	82	52	220	285	165	344	29	20474
'39	157	94	31	219	561	88	49	234	288	148	262	24	19129
'38	106	50	18	90	404	48	44	146	210	68	224	22	12271
'37	191	89	35	182	547	80	75	233	411	174	418	32	23163
'36	64	24	7	51	183	34	29	94	149	52	125	9	8352
'35	29	8	11	31	82	19	11	48	95	28	80	5	4491
'34	3	5	6	5	23	17	9	24	42	18	49	7	1675
'33	13	1		2	9	4	6	5	8	1	13		829
Before '33	34	7	6	19	39	11	21	16	50	8	31	2	3075
Unid.*	11	6	1	14	38	3		3	1		13		673
Total	744	380	149	814	2514	367	296	1023	1539	660	1580	138	94132
LINCOLN													
6 Mos. '49	255	416	227	523	2966	226	71	330	657	323	460	121	42534
'48	49	50	15	127	560	26	17	525	110	50	97	19	10791
'47	126	162	36	205	1026	68	24	277	227	100	256	39	18916
'46	93	104	25	183	702	53	20	193	206	77	171	22	13290
'45-'42	34	42	14	81	431	30	5	47	85	35	67	12	5401
'41	112	149	51	231	1096	93	47	276	327	136	309	83	18965
'40	125	106	63	192	959	120	39	258	332	138	293	50	18545
'39	95	101	57	210	839	96	36	255	323	115	265	61	16466
'38	63	91	41	111	549	63	29	187	309	102	196	37	12661
'37	106	115	75	186	650	117	36	220	477	143	395	51	17929
'36	32	33	25	39	271	73	11	87	214	43	158	31	7303
'35	5	2		7	16	3	3	14	6	3	3		607
'34	2	1		2	11	3		8	7	4	6		544
'33	1		1	2	4		2	2	8	3	2		266
Before '33	13	7	1	13	20	2	2	10	43	8	13	3	1539
Unid.*	15	4		24	11	6	8	2		1	2	3	725
Total	1126	1383	631	2136	10111	961	350	2691	3331	1281	2893	532	186482
MERCURY													
6 Mos. '49	819	1502	1104	2289	11156	953	291	1801	2714	1467	1978	418	167513
'48	209	433	300	698	3385	208	59	2348	822	345	806	147	56442
'47	345	811	407	1062	4597	464	96	1603	1248	594	1285	212	81487
'46	342	904	544	1155	4835	433	105	1225	1314	614	1393	221	73926
'45-'42	68	342	143	341	1873	138	33	233	364	215	424	76	19923
'41	348	1358	487	1350	6519	588	148	1382	1456	606	1714	281	83848
'40	379	1145	464	1024	4368	506	142	1173	1275	480	1553	252	73268
'39	254	822	330	669	2681	300	116	915	1063	415	1217	186	53541
'38													
'37													
'36													
'35													
'34													
'33													
Before '33													
Unid.*	27	15	19	81	259	4	8	73	13	2	37	8	3363
Total	2791	7332	3708	8660	39673	3594	996	10453	10067	4738	10407	1801	613311
NASH													
6 Mos. '49	501	622	437	983	3026	488	222	934	1727	591	1601	180	77382
'48	748	737	361	1249	3839	391	220	1806	1823	738	4295	245	98393
'47	679	688	352	1126	3564	471	178	1721	1579	834	3404	185	90541
'46	616	556	373	1143	3305	420	179	1445	1693	853	2990	164	83109
'45-'42	160	215	181	490	1209	170	43	216	840	218	1407	62	27513
'41	544	300	372	1040	2127	375	118	645	2520	602	4588	156	76826
'40	353	274	274	555	1627	275	106	438	1406	476	3277	138	54830
'39	352	161	196	432	912	214	102	301	989	317	2544	93	41372
'38	183	107	150	327	642	170	83	254	684	212	2388	79	29399
'37	448	133	258	619	913	299	166	317	1495	450	6413	130	61036
'36	212	56	179	240	404	252	97	218	911	330	2386	79	30927
'35	42	11	47	54	114	89	34	95	171	101	1216	14	10604
'34	88	16	29	43	67	68	23	51	138	81	582	11	7839
'33	11	2	2	10	11	8	7	12	37	11	116	1	1884
Before '33	88	51	120	89	214	83	125	86	437	124	1241	32	17283
Unid.*	19	4	4	30	17	8	3	5	3	7	43	3	1670
Total	5044	3933	3335	8430	21991	3781	1705	8543	16453	5945	30491	1672	710668
OLDSMOBILE													
6 Mos. '49	939	927	520	1604	5082	478	331	2004	2206	586	1394	170	124945
'48	1148	1215	636	1782	6713	588	352	2538	2584	819	3234	298	158114
'47	1239	1300	675	1856	7199	712	399	2748	2904	1439	4253	352	177844
'46	849	815	375	1187	4441	456	265	1644	2008	938	2702	214	107622
'45-'42	431	467	210	707	3328	323	136	577	1319	528	1554	129	59909
'41	2013	1845	789	3057	10712	1277	597	3862	5766	2156	6501	491	249787
'40	1610	1288	607	1872	7064	1054	525	2661	3788	1650	4582	360	180413
'39	1090	706	472	1439	4357	649	420	1780	2611	984	2969	292	121286
'38	746	364	258	890	3284	441	280	997	1923	717	2241	161	82268
'37	1706	703	471	1665	5096	820	405	1690	3983	1449	5194	333	163584
'36	1343	497	466	1160	3500	780	435	1361	3354	1415	4768	253	140436
'35	548	288	312	533	1582	427	226	762	1630	669	2650	151	72441
'34	210	99	83	185	486	128	118	214	846	307	1096	56	27368
'33	50	26	28	21	72	38	45	75	205	69	322	12	7310
Before '33	76	53	224	126	275	65	109	117	636	163	1138	54	21034
Unid.*	50	28	12	66	49	5		13	8	6	35	1	4316
Total	14048	10621	6138	18150	63240	8241	4643	22943	35771	13910	44631	3316	1686676

Unid.*—Unidentified as to year of manufacture. Data from the Reuben H. Donnelley Corp. are as of July 1, 1949.

CARS IN USE BY MAKES, STATES

Make	Model	Ala.	Ariz.	Ark.	Calif.	Colo.	Conn.	Del.	D. C.	Fla.	Ga.	Idaho	Ill.	Ind.
PACKARD	6 Mos. '49	448	202	370	3254	428	487	129	423	1218	770	191	5339	1673
	'48	456	383	398	7167	687	1422	194	609	1627	976	273	6562	2112
	'47	261	208	191	4749	309	779	94	364	843	558	140	2888	927
	'46	251	179	161	3552	277	575	78	306	733	449	97	2133	720
	'45-'42	286	212	105	2791	218	576	61	192	804	466	79	1999	599
	'41	665	423	227	8770	575	1625	160	432	2003	828	161	4207	1164
	'40	690	541	329	9565	733	2371	213	499	2248	1064	257	6177	1783
	'39	307	232	140	6669	332	1013	97	248	1028	485	81	2606	690
	'38	263	270	150	5605	382	1128	96	200	1117	407	106	2889	716
	'37	672	498	254	9105	783	2774	226	370	1946	909	229	3788	1639
	'36	166	195	116	6063	326	1118	87	165	704	271	77	2010	831
	'35	46	70	38	2599	142	373	32	43	234	96	31	538	252
	'34	12	15	2	401	22	127	8	24	62	23	4	101	46
	'33	1	5	2	353	20	57	4	6	35	9	2	45	30
	Before '33	39	83	30	2101	109	316	26	46	193	62	33	344	124
	Unid.*	9	13	5	16	1	46	7	234	33	87	2	82	7
	Total	4334	3629	2514	72984	5244	14767	1512	4244	14828	7540	1763	41707	13313
PLYMOUTH	6 Mos. '49	2796	787	1506	17232	2074	2176	522	2501	4665	3353	742	20134	7735
	'48	4053	1319	2561	20710	2687	3969	663	3249	6175	5733	1261	23427	9020
	'47	3736	1403	2383	24667	2869	3996	678	2767	6302	5163	1273	22649	9370
	'46	3251	949	1980	15447	2047	3012	447	1498	4841	3935	916	16255	6734
	'45-'42	1795	789	986	7181	1073	1887	224	752	2917	2333	501	6912	4240
	'41	5908	2496	2847	40264	4013	8342	1109	2817	11209	8095	1749	29664	17033
	'40	4148	2034	2019	40252	3080	6906	786	1789	7894	5404	1579	24327	13522
	'39	3873	1697	1981	30102	3141	6750	761	1608	7168	5014	1357	22386	10071
	'38	2139	1028	1253	24421	2043	4089	464	851	4192	2547	848	13649	7910
	'37	3975	2551	2516	37394	4923	8412	920	1264	7026	5004	1899	27826	15317
	'36	2667	1567	1647	37087	4441	7056	787	870	5534	3883	1811	21931	14041
	'35	1532	992	1182	25626	2297	3349	356	368	2751	2095	1096	9724	8270
	'34	1076	746	777	16275	1473	2290	257	154	1860	1518	640	5042	4774
	'33	613	422	480	12141	1158	1824	165	94	1337	931	328	3585	3190
	Before '33	337	289	359	8019	836	928	116	43	1029	498	287	2498	2019
	Unid.*	79	46	40	35	26	148	33	1511	186	567	18	450	34
	Total	41977	19096	24697	355853	38201	65136	8288	22134	75086	58073	16305	250457	133280
PONTIAC	6 Mos. '49	1279	397	652	12199	928	1209	369	881	2029	2083	357	9171	3836
	'48	1948	853	1463	17683	1614	3794	669	1440	3710	3100	819	15593	6545
	'47	1601	771	1262	16674	1638	3985	652	1402	3197	2577	679	15323	6256
	'46	1069	507	744	10663	902	2464	376	811	2134	1612	409	9035	3736
	'45-'42	894	391	484	8250	711	1436	209	332	1488	1221	296	4555	2191
	'41	2922	1500	1754	31626	2647	6397	928	1723	5690	3588	980	18765	9620
	'40	1496	889	1045	25418	1708	4689	645	1191	3445	2111	645	13033	6030
	'39	1106	504	707	15524	1052	3157	424	674	2125	1325	319	8378	3225
	'38	696	384	389	10376	711	1677	263	328	1447	753	265	5728	2220
	'37	1328	833	893	20703	1730	4273	604	541	2926	1537	631	15206	6676
	'36	777	559	690	15573	1258	2891	363	292	1794	895	482	7344	4448
	'35	287	336	329	8059	892	1264	166	114	952	444	263	2593	2503
	'34	124	108	69	2029	296	724	77	46	435	225	66	999	723
	'33	97	86	62	1856	243	720	77	62	387	152	36	909	506
	Before '33	90	113	124	3326	411	729	83	39	378	213	82	1402	1213
	Unid.*	14	30	17	30	11	116	18	683	80	165	7	218	46
	Total	15730	8259	10694	196991	16942	38524	5913	10459	32075	22004	6336	128251	59673
STUDEBAKER	6 Mos. '49	977	473	803	10829	548	894	207	852	1467	1302	509	6172	4851
	'48	1669	1238	866	17090	1074	2412	412	1050	2794	2350	994	10334	9653
	'47	1219	860	545	12525	1205	2031	324	710	2604	1823	807	9671	8231
	'46	218	92	94	7250	186	356	43	92	393	250	93	1133	744
	'45-'42	565	246	219	3987	468	662	92	194	916	747	314	2949	1929
	'41	1429	686	533	15134	1216	1752	299	608	2499	1568	839	7851	5621
	'40	1080	525	512	13558	980	1271	224	435	1868	1085	623	6028	4245
	'39	393	377	293	11602	645	1036	179	326	1327	693	408	4357	2938
	'38	142	191	109	6011	368	611	94	196	524	243	196	2278	1384
	'37	302	355	202	8030	728	1291	210	216	935	569	421	4608	3093
	'36	137	224	83	7516	398	660	70	86	419	245	258	1930	1557
	'35	49	104	48	3368	231	349	37	46	224	179	137	887	771
	'34	36	91	82	2376	158	245	26	21	160	68	70	398	345
	'33	9	24	9	1412	50	98	9	10	42	31	9	116	139
	Before '33	64	166	47	5286	299	418	52	33	201	126	110	742	541
	Unid.*	22	11	4	15	7	52	9	323	51	102	1	83	26
	Total	6311	5663	4119	125989	8529	13936	2267	4698	16422	11390	5766	59437	46066
WILLYS	6 Mos. '49	189	57	250	916	81	162	32	77	710	255	149	1223	504
	'48	387	122	893	1549	120	546	64	131	1479	424	523	3264	945
	'47	312	138	510	1888	79	359	49	116	1396	355	317	2477	779
	'46	213	46	268	1767	50	366	48	64	871	73	131	1933	529
	'45-'42	532	78	155	1723	80	177	24	60	714	250	150	604	310
	'41	573	120	136	3330	157	245	47	44	699	374	135	694	607
	'40	421	112	156	3180	210	313	43	31	761	314	108	1010	681
	'39	121	40	37	1955	78	123	16	37	347	89	35	344	337
	'38	122	72	64	1635	84	149	20	18	392	132	52	543	359
	'37	241	239	174	6416	379	422	47	28	686	240	124	1521	1297
	'36	55	68	32	2218	56	55	3	1	200	68	31	80	148
	'35	31	46	17	1721	15	19	1	1	63	27	9	28	81
	'34	22	12	7	763	10	12	1	1	89	34	20	17	22
	'33	17	12	4	573	18	26	3	1	84	15	2	54	62
	Before '33	34	67	28	1896	243	172	25	13	156	72	55	618	369
	Unid.*	11	3	8	8	3	14	2	73	41	41	5	48	8
	Total	3251	1219	2539	31538	1663	3160	425	696	8658	2763	1846	14458	7038
MISC.	6 Mos. '49	39	17	108	822	59	110	87	91	282	279	32	1586	146
	'48	66	46	125	2081	134	746	245	266	374	342	137	2331	272
	'47	49	21	87	443	39	131	38	49	147	256	40	194	68
	'46	40	2	50	266	30	77	19	19	136	183	17	125	45
	'45-'42	27	9	37	113	16	61	19	7	71	127	14	74	21
	'41	35	27	103	242	52	92	21	19	110	395	65	178	88
	'40	30	11	93	311	41	130	26	16	139	261	45	198	109
	'39	28	21	69	422	48	77	25	12	158	216	25	189	109
	'38	16	16	62	381	32	61	19	12	143	109	24	164	109
	'37	31	33	145	526	105	119	25	20	164	209	30	379	115
	'36	27	32	120	715	101	116	43	15	153	187	38	330	192
	'35	21	18	62	515	69	87	35	9	120	118	25	205	168
	'34	16	13	39	468	45	93	30	11	100	99	18	109	65
	'33	14	14	19	674	44	81	32	3	140	76	5	101	98
	Before '33	93	162	223	6231	514	678	285	58	475	289	172	1387	760
	Unid.*	113	13	186	504	70	153	56	61	147	194	30	357	84
	Total	648	455	1528	14714	1399	2792	1005	686	2859	3340	717	7907	2449
Total All Makes		38495	163133	243838	3230022	340680	480852	74934	147827	626484	530847	145470	1980867	1002470

Make	Model	Iowa	Kan.	Ky.	La.	Me.	Md.	Mass.	Mich.	Minn.	Miss.	Mo.	Mont.
PACKARD	6 Mos. '49	1070	807	695	706	234	932	1304	4240	1275	364	1165	300
	'48	1359	904	763	862	508	1406	2379	5379	1363	376	1451	352
	'47	507	415	348	420	218	683	1384	3073	968	170	782	165
	'46	390	325	313	323	154	559	1130	1522	509	161	642	119
	'45-'42	274	214	298	337	121	439	1149	1232	407	127	598	76
	'41	545	506	634	579	319	1154	2776	2824	932	224	1377	175
	'40	738	650	761	740	417	1542	3523	3826	1273	296	1754	226
	'39	337	281	371	388	217	704	1823	1204	599	130	872	82
	'38	442	359	403	288	243	692	1942	1203	780	92	873	113
	'37	855	724	1004	426	615	1631	4413	3718	1364	237	1688	270
	'36	348	267	378	147	237	627	1835	1004	690	65	661	97
	'35	156	116	156	44	87	232	713	309	303	35	294	64
	'34	21	14	32	13	24	58	200	70	57	6	39	3
	'33	13	6	17	1	24	36	97	32	26	2	35	3
	Before '33	95	41	82	35	96	197	448	216	295	25	165	19
	Unid.*	1	5	3	45	2	48	6	779	10	12	64	4
	Total	7151	5634	6258	5356	3516	10939	25131	30431	10551	2321	12400	2068
PLYMOUTH	6 Mos. '49	5094	3037	3466	2724	1062	3996	7420	18646	6178	1848	6790	938
	'48	7077	4734	4291	5325	1707	5071	10011	17672	7547	3495	9081	1387
	'47	7143	4950	4314	4307	1662	5191	10063	16394	7443	2823	8027	1159
	'46	4511	3301	3385	3288	1121	3424	7431	11064	5138	2165	6119	919
	'45-'42	2267	1741	1877	2011	615	1714	3862	5593	2973	1070	2846	458
	'41	8328	6399	6529	6617	2456	8489	17617	24404	9586	3211	11811	1606
	'40	6602	4895	4864	4403	1896	6017	13508	16234	8542	2215	10238	1334
	'39	7109	4666	4815	3179	1943	5822	13673	14154	8240	2046	9464	1163
	'38	4796	3541	3396	2851	1387	3550	8160	6397	6249	1210	6202	750
	'37	8188	6844	7127	3957	2436	7032	13662	19900	10853	2283	11480	1593
	'36	7924	6102	5769	2840	1914	6018	11912	13023	10102	1807	9117	1618
	'35	5201	3907	3409	1396	1101	2729	5504	5791	6255	971	5384	1149
	'34	2621	2402	2576	1059	808	1967	3599	3295	3077	667	4062	575
	'33	1623	1564	2004	531	590	1270	2483	1896	2355	310	3378	331
	Before '33	1550	1116	1136	349	607	888	1071	1626	2896	222	2537	314
	Unid.*	23	38	25	293	4	253	25	5531	68	103	724	17
	Total	80066	59237	58983	45130	21310	63431	130001	181620	97502	26446	107260	15493
PONTIAC	6 Mos. '49	2156	1510	1449	1628	632	1828	4220	13945	2462	965	2874	499
	'48	4068	3187	2378	2957	1364	3368	7509	17637	4525	1714	4649	821
	'47	3577	3069	2272	2410	1446	3274	7708	15278	4035	1256	4067	568
	'46	1925	1697	1469	1396	856	1901	4584	8633	2434	765	2424	321
	'45-'42	1113	1098	955	1114	507	1056	2565	4898	1352	637	1382	288
	'41	4153	4058	3449	3535	2259	4695	11509	20047	5297	1682	6089	698
	'40	2999	2447	2310	1755	1472	3258	7451	11192	3518	950	4244	394
	'39	2363	1690	1521	1204	1089	2193	5343	6331	2501	631	2900	249
	'38	1633	1372	909	733	831	1371	3002	3748	1764	406	1908	199
	'37	3632	3093	2358	1033	1522	3080	7275	11280	4426	689	4320	544
	'36	2478	2235	1665	699	907	1909	4906	5955	3201	477	3125	344
	'35	1558	1264	802	312	500	878	2187	2910	2043	226	1653	282
	'34	497	433	311	101	281	430	1134	854	565	100	647	89
	'33	388	430	263	72	254	403	1119	738	558	55	577	94
	Before '33	1182	958	358	157	519	429	1008	1310	1943	73	1081	196
	Unid.*	11	16	3	101	3	108	16	2183	43	48	243	5
	Total	33743	28557	22472	19206	14532	30181	71538	128937	40667	10893	42163	5591
STUDEBAKER	6 Mos. '49	1472	999	1004	1301	354	1220	2283	3824	2003	626	1547	481
	'48	2898	2167	1696	2310	695	2403	4216	6223	3601	1004	3031	912
	'47	2647	2047	1263	1783	561	1903	3261	5393	3158	749	2579	700
	'46	309	223	177	311	115	294	526	634	406	136	369	100
	'45-'42	926	548	450	799	176	547	948	1545	1194	251	865	200
	'41	2426	1426	1195	1674	479	1713	3273	4140	3066	490	2631	616
	'40	1840	1056	894	1189	372	1332	2130	2949	2414	437	2392	557
	'39	1333	773	642	603	314	1065	2046	1959	1745	224	1678	384
	'38	713	448	317	306	203	571	1017	743	973	86	598	172
	'37	1379	832	655	410	394	1262	2144	1616	1786	139	1215	292
	'36	787	492	323	219	181	464	995	648	1021	54	695	178
	'35	463	326	178	155	128	236	827	321	596	43	401	123
	'34	252	246	108	57	97	159	371	205	481	20	249	82
	'33	62	54	45	22	31	87	145	51	154	7	101	20
	Before '33	494	370	186	90	260	312	564	534	958	47	347	104
	Unid.*	11	17	3	75	1	57	4	727	9	35	159	3
	Total	18212	12024	9136	11304	4361	13625	24480	31512	23559	4349	18674	5004
WILLYS	6 Mos. '49	211	161	673	323	81	292	468	768	234	230	614	53
	'48	611	374	2352	731	23	571	921	1691	658	641	1793	115
	'47	564	311	1634	669	7	437	823	1617	488	542	1004	100
	'46	250	196	846	342	5	429	863	1406	278	356	1056	20
	'45-'42	156	158	569	288	40	209	482	633	154	293	404	50
	'41	281	194	253	237	135	410	520	864	275	149	352	78
	'40	333	224	279	308	168	376	535	798	288	133	348	69
	'39	105	86	123	84	97	137	221	234	204	47	194	21
	'38	198	193	130	182	64	171	232	292	271	45	255	34
	'37	459	381	361	175	146	423	677	991	699	88	686	110
	'36	45	36	50	39	10	24	41	89	51	19	36	11
	'35	12	13	28	25	3	8	12	35	49	6	18	20
	'34	6	9	8	22	8	8	7	11	5	4	7	1
	'33	29	19	33	7	6	28	37	31	80	5	49	3
	Before '33	640	521	184	55	124	223	155	328	961	31	580	98
	Unid.*	26	2	6	67	1	18	17	199	7	42	91	11
	Total	3928	2880	7529	3564	938	3764	6011	9987	4722	2630	8045	794
MISC.	6 Mos. '49	67	166	50	119	56	141	469	418	87	98	161	17
	'48	87	78	145	251	99	390	891	858	496	139	230	25
	'47	23	26	54	78	16	65	452	193	48	53	89	3
	'46	27	13	44	73	12	28	386	105	29	62	66	4
	'45-'42	16	9	16	52	17	28	481	65	29	54	20	2
	'41	53	31	49	160	19	32	315	203	74	91	103	5
	'40	47	21	30	63	15	44	380	168	94	52	107	6
	'39	31	20	35	58	18	40	282	133	50	40	89	6
	'38	54	20	35	30	10	30	145	95	23	21	57	6
	'37	107	35	73	46	14	40	291	236	56	35	123	7
	'36	98	75	91	55	22	71	578	360	107	34	144	15
	'35	66	52	50	29	21	61	295	177	130	18	99	16
	'34	32	38	35	19	31	48	232	96	57	17	87	7
	'33	52	50	62	24	35	50	132	102	76	12	77	11
	Before '33	844	566	284	140	337	452	901	1063	1231	117	820	213
	Unid.*	55	10	26	83	113	92	120	649	18	419	315	78
	Total	1659	1208	1079	1280	835	1612	6350	4921	2607	1262	2567	421
Total All Makes		724554	556422	462780	412830	181999	446919	964454	1750240	813513	254763	858624	140630

Unid.*—Unidentified as to year of manufacture. Data from the Reuben H. Donnelley Corp. are as of July 1, 1949.

For Summary of Cars in Use by Makes, by Year of Manufacture, see page 94

AND YEAR OF MANUFACTURE—*concluded*

Make	Model	Neb.	Nev.	N.H.	N.J.	N.M.	N.Y.	N.C.	N.D.	Ohio	Okla.	Ore.	Pa.	R.I.	S.C.	S.D.	Tenn.	Tex.	Utah	Vt.	Va.	Wash.	W.Va.	Wis.	Wyo.	Totals
PACKARD	6 Mos. '49	538	88	203	1926	295	6532	1059	186	3185	432	828	8245	206	392	367	634	1909	272	162	807	985	390	474	114	55163
	'48	517	160	278	3463	312	10641	1066	159	4525	793	1117	7324	338	490	287	807	2962	286	209	1342	1353	516	1285	177	80359
	'47	274	84	187	1762	177	4723	546	86	2502	450	444	3375	196	283	95	519	1458	150	124	700	592	419	640	78	41014
	'46	204	65	155	1539	152	3687	454	61	1839	345	367	2704	187	226	77	377	1162	132	116	553	569	286	491	67	31484
	'45-'42	138	55	91	1146	119	2673	359	28	1609	232	501	2218	131	182	28	439	1141	120	82	238	543	244	449	55	26560
	'41	279	139	265	3037	296	6449	814	50	3765	542	837	8752	459	487	83	807	2173	299	204	1126	1576	612	1045	84	64153
	'40	383	146	332	4325	258	9048	1008	93	8014	676	1006	7617	498	562	121	1085	2831	386	331	1219	1786	866	1372	149	83294
	'39	192	63	164	2108	135	4136	508	28	1959	380	430	3240	330	281	65	505	1186	139	115	806	710	371	692	88	39556
	'38	254	62	121	2279	131	4992	492	64	2164	357	487	3025	329	250	86	410	1214	204	153	578	799	443	771	63	40686
	'37	405	120	384	4742	252	10181	980	86	5594	616	971	7819	763	579	154	862	1992	389	306	1077	1811	904	1706	127	82926
	'36	203	56	128	1784	122	4402	325	29	2039	308	499	3170	273	172	78	245	669	207	121	528	729	355	1010	53	35982
	'35	97	21	50	711	42	1708	121	17	669	148	188	1222	85	57	36	82	212	72	46	186	282	129	373	14	13539
	'34	5	4	12	236	16	419	19	4	143	24	31	267	29	5	4	20	34	7	15	30	46	24	66	4	2849
	'33	5	.....	2	108	5	280	4	2	103	10	14	160	18	6	2	4	34	8	18	23	32	10	24	3	1715
	Before '33	83	29	36	736	18	1196	56	9	445	73	224	851	78	44	29	69	122	44	37	67	306	67	165	9	9985
	Unid.*	10	3	4	35	.....	51	2	.....	29	1	1	95	23	31	2	36	18	3	1	1	4	2	16	4	1896
	Total	3555	1097	2410	29937	2310	71097	7813	902	35564	5405	8035	54064	3952	4056	1513	6903	19117	2718	2036	8283	12982	5597	10577	1068	611168
PLYMOUTH	6 Mos. '49	3494	283	813	7152	746	20942	4045	1274	15369	2669	2497	21167	1291	1821	1328	3664	10782	1048	471	4454	3668	2000	2946	452	242035
	'48	3950	491	1149	9877	1041	26120	5459	2073	19807	4664	3448	24887	1783	2899	2127	5245	17500	1297	754	7294	5057	2317	8293	922	317649
	'47	4166	455	1022	10488	1124	26987	6018	1894	20673	4168	3465	26097	1816	2869	2200	4838	17648	1342	696	6824	4735	3729	6757	820	321885
	'46	2524	302	837	7282	836	19129	4410	1222	14171	3301	2267	16879	1268	2163	1298	3919	12745	934	485	4901	3114	2880	4620	562	225207
	'45-'42	1157	182	281	4030	528	9493	3069	651	6600	1285	1593	7918	553	1456	590	2336	7419	753	230	1615	2489	1449	2370	291	119163
	'41	3838	620	1434	17588	1585	41606	10764	1979	36401	4824	6182	37214	3316	5337	1864	7906	22265	2087	1046	10204	9745	5650	9424	982	496586
	'40	2939	471	1332	14123	1150	34346	6910	1425	29551	4018	4928	28888	2752	3571	1501	6221	14834	1878	870	8521	7204	4077	8418	715	384129
	'39	3146	402	1332	14102	1046	34407	7036	1089	25902	3549	4091	27063	3129	3510	1497	6020	13864	1626	841	6372	6250	3731	7978	666	349832
	'38	2221	242	854	9540	679	23639	3899	796	13572	3084	2568	16673	1521	1715	1111	3203	9794	992	627	4531	4136	2614	5053	440	228227
	'37	3904	509	1527	16032	1307	38033	6800	1287	32968	4980	6226	35599	3589	3186	1637	6404	15376	2186	1040	6243	9668	5481	11469	867	430610
	'36	4229	447	1374	13067	1102	32256	4918	959	27130	4183	5457	31566	3037	2238	1535	4685	11408	2064	984	5680	8396	5038	10073	816	364311
	'35	2732	252	771	6205	620	15072	2990	941	13719	2856	3394	13982	1503	1299	1013	2826	6369	1170	567	3400	4805	2807	6661	491	198880
	'34	1423	157	500	4283	360	10581	2233	394	10202	1653	2301	10655	875	965	455	2027	3975	710	402	1884	3192	2114	3538	303	127775
	'33	981	97	366	3043	204	8469	1331	241	6701	965	1731	6419	685	675	241	1161	2489	440	279	1195	2374	1302	2407	162	88550
	Before '33	989	67	261	1857	148	5570	506	319	3813	881	1296	6535	273	243	363	612	1283	173	293	644	2156	762	2235	129	61574
	Unid.*	94	9	8	79	15	99	4	7	153	72	2	502	97	65	23	286	116	10	4	22	13	11	72	6	12044
	Total	41887	4986	13861	138757	12491	346749	70391	16531	278952	46862	51446	311054	27488	34013	18780	58646	167867	18720	9586	73874	70921	45871	90214	8844	3968557
PONTIAC	6 Mos. '49	1567	162	550	5421	374	13664	2181	356	8017	1607	1347	8210	654	902	525	1730	4816	548	307	2066	1695	564	1406	147	128834
	'48	2100	322	739	9984	537	22887	4150	983	15101	2796	2559	15490	1186	1993	1068	2992	9852	1067	566	3731	3262	940	3412	406	221561
	'47	1961	291	727	10025	547	22414	4378	851	14677	2757	2697	14876	1296	1927	935	2668	9620	903	636	3723	3576	1634	4145	375	212615
	'46	1009	173	480	5934	318	13410	2799	479	8864	1568	1702	8293	826	1268	556	1543	5380	549	377	2296	2248	1063	2396	244	126752
	'45-'42	606	120	195	3205	252	6140	2146	253	5139	911	932	4552	416	1027	244	1161	3840	432	224	750	1650	695	1484	156	73037
	'41	2123	402	1057	14946	794	28364	6851	748	22542	3920	4556	19526	2376	3408	803	3938	12506	1654	776	5049	6071	2559	6501	827	307608
	'40	1383	254	743	11157	529	20181	3955	413	14724	2656	3039	13754	1418	1611	472	2155	6683	1070	563	3742	3764	1707	4682	294	206206
	'39	953	134	583	7740	275	14277	2330	256	9335	1835	1577	8792	1133	893	325	1459	3775	489	377	2339	1960	974	2973	164	131611
	'38	660	89	374	5127	157	9687	1448	219	5517	1220	1143	5263	561	539	268	903	2996	353	237	1263	1508	595	2231	123	85614
	'37	1516	231	776	9539	375	19451	2428	391	16035	2665	2753	14837	1409	1007	677	1725	4956	796	645	2359	4063	1629	5747	281	197223
	'36	1234	159	565	5893	228	12741	1136	266	9237	1985	1970	8879	916	585	437	1223	3139	562	389	1497	2460	1310	4154	244	126497
	'35	781	90	296	2742	165	6498	731	256	4235	1109	909	4047	449	350	301	550	1786	345	197	920	1277	628	2820	168	64072
	'34	243	22	130	1308	44	3237	295	77	1151	330	306	1917	242	132	81	188	564	89	105	305	405	214	[illegible]	44	23704
	'33	174	18	151	1488	34	3833	265	79	1096	240	233	1689	248	137	60	134	431	68	100	277	313	167	841	27	22339
	Before '33	680	16	270	1343	40	3425	220	231	2320	352	471	2214	273	130	212	200	508	111	203	383	730	317	[illegible]	61	33915
	Unid.*	26	4	4	60	1	71	5	3	54	32	4	187	51	33	8	76	50	4	3	19	4	3	50	2	4969
	Total	17035	2489	7840	95912	4670	200800	35318	5861	138044	25983	26198	132466	13454	16141	6694	22645	70906	9040	5666	30718	33214	14936	45223	3262	1965757
STUDEBAKER	6 Mos. '49	961	165	286	2504	349	7127	1407	338	4028	787	1245	6272	436	602	400	1208	3724	568	225	1493	1948	502	866	154	83810
	'48	1520	369	405	5091	540	12783	2843	658	8695	1665	2876	12230	907	1134	635	1966	7534	690	421	2511	3746	953	2496	410	156267
	'47	1449	220	362	4223	526	10905	2227	569	7446	1523	2127	9618	722	862	595	1581	7126	756	282	1932	2803	1070	2467	326	130445
	'46	190	28	83	606	52	1537	302	88	959	455	326	1344	111	132	86	253	830	102	38	797	380	166	356	40	23817
	'45-'42	496	79	109	1114	159	2550	756	169	2537	425	1047	2818	193	289	166	861	2293	349	64	464	1301	474	828	89	41259
	'41	1181	208	302	3841	374	7501	2050	420	7299	1212	2434	8942	671	747	496	1728	8210	968	190	1874	3776	1321	2733	321	118945
	'40	783	166	290	2792	290	5944	1353	281	6115	972	1695	6792	478	615	438	1290	3395	790	142	1552	2867	1158	2149	239	92290
	'39	614	135	231	2274	199	4935	806	180	4404	681	1159	5471	483	429	263	810	2453	698	120	994	1938	833	1849	137	69448
	'38	311	56	125	1342	103	2680	243	99	1919	355	695	2834	232	104	122	297	1384	325	57	417	1003	390	802	81	34435
	'37	507	112	246	2856	136	5498	373	146	4745	653	1267	6684	497	250	217	567	2076	613	116	520	2030	795	1940	130	66046
	'36	394	68	123	1111	82	2327	167	86	1873	432	875	2258	139	104	126	232	1034	321	51	338	1422	328	1201	90	34819
	'35	251	32	75	583	42	1291	108	70	1034	168	475	1114	68	55	94	122	530	153	40	157	786	180	606	46	18017
	'34	151	24	65	437	28	1213	68	44	641	115	303	760	42	49	60	57	337	61	23	114	444	93	328	21	11851
	'33	53	13	17	150	3	527	28	12	228	32	92	311	16	4	14	31	91	16	11	48	154	29	148	4	4767
	Before '33	447	43	108	856	50	2237	95	103	1100	151	568	1607	95	59	139	136	411	104	88	150	826	191	834	82	22798
	Unid.*	16	5	4	32	11	34	2	1	78	6	1	181	21	8	6	58	24	8	.....	2	7	4	69	4	2389
	Total	9324	1722	2831	29822	2934	69089	12832	3286	53101	9522	17175	69236	5121	5443	3857	10867	39449	6729	1843	13361	25169	8447	18714	2144	911395
WILLYS	6 Mos. '49	130	13	67	676	97	1541	316	102	1282	148	221	1206	83	167	49	632	1084	43	65	228	306	138	196	112	17483
	'48	287	29	126	986	266	3223	387	493	2747	271	490	2769	151	189	72	1318	2963	73	94	901	571	196	686	346	40192
	'47	204	44	84	848	253	2718	313	368	2264	256	438	2074	136	99	47	1070	2224	86	101	732	603	142	814	314	33497
	'46	97	16	56	1085	156	2283	70	211	1924	148	199	1902	129	25	12	666	1347	17	33	633	300	36	335	136	24212
	'45-'42	72	20	33	653	107	1338	156	66	931	157	320	687	86	80	21	510	1125	61	24	340	648	155	129	39	16077
	'41	109	27	67	866	63	1341	405	95	1303	145	487	2040	190	148	81	406	642	148	47	261	719	240	269	40	20808
	'40	82	16	101	748	71	1546	354	67	1964	226	574	1797	103	166	98	431	642	105	60	204	672	318	441	34	21937
	'39	39	9	37	384	20	843	110	20	825	127	170	557	15	66	28	126	222	46	22	158	161	133	160	14	9366
	'38	91	11	33	443	38	1000	133	32	665	162	233	722	31	61	42	110	333	39	28	126	234	159	223	32	10710
	'37	274	33	117	943	90	1989	275	73	2575	412	622	1906	93	183	78	297	730	129	67	313	900	425	700	64	30276
	'36	23	13	24	51	12	158	15	17	360	56	315	99	4	24	12	90	102	28	13	22	366	30	32	6	5338
	'35	4	4	5	22	12	47	15	2	123	36	132	23	1	17	4	34	64	12	4	20	155	14	24	1	3062
	'34	4	2	1	13	3	59	24	1	41	10	80	39	4	14	2	34	36	3	2	3	66	7	9	.....	1563
	'33	10	4	6	68	2	241	9	6	145	10	38	125	10	29	4	22	36	2	6	6	58	30	84	1	2120
	Before '33	473	15	50	412	18	1231	66	137	1264	102	284	1148	88	47	129	68	264	41	87	106	430	197	816	21	16110
	Unid.*	7	.....	1	4	2	55	1	2	38	7	1	57	9	2	4	53	27	.....	2	4	4	5	23	2	1062
	Total	1906	256	808	7982	1210	19613	2660	1712	18471	2272	4802	17151	1106	1306	681	5756	11841	834	665	4044	6082	2185	4482	1162	252922
MISC.	6 Mos. '49	43	1	41	368	235	2410	152	8	274	50	44	559	42	101	24	131	692	27	42	87	153	12	137	8	11148
	'48	113	12	67	1633	228	5200	318	31	586	54	173	1119	106	129	29	142	1617	24	76	518	517	29	153	17	23745
	'47	38	11	11	190	197	564	61	17	81	19	28	235	34	17	18	64	529	8	12	109	35	11	100	18	8063
	'46	18	8	10	151	120	309	29	15	57	16	11	62	24	8	13	69	404	12	7	108	19	11	47	23	3399
	'45-'42	10	8	3	157	61	139	42	10	68	9	25	73	15	8	7	117	277	4	7	63	32	5	93	16	2634
	'41	22	9	14	118	173	452	49	15	138	52	26	101	33	13	12	94	644	16	7	51	159	17	239	22	5038
	'40	27	9	4	149	142	444	47	7	164	45	30	155	27	23	17	82	414	8	13	45	67	24	104	10	4502
	'39	21	4	10	148	82	384	57	15	100	38	49	126	20	34	17	62	300	14	14	46	50	15	124	9	3960
	'38	19	10	12	131	56	299	65	8	94	32	18	90	21	12	12	42	235	6	7	41	40	20	92	9	3044
	'37	24	19	17	130	74	399	83	29	158	27	31	143	26	20	13	53	296	31	11	49	79	31	176	6	4891
	'36	55	17	28	186	38	479	85	18	280	70	95	305	50	16	11	42	282	22	16	56	121	43	210	13	6235
	'35	35	7	35	175	34	380	34	13	257	40	75	240	31	20	19	31	136	17	14	43	92	38	178	16	4404
	'34	24	4	7	120	16	301	40	5	190	35	46	222	32	16	11	26	103	14	5	40	74	31	81	4	3250
	'33	29	4	29	153	10	371	30	10	154	21	36	219	23	27	7	26	102	13	8	42	52	25	78	3	3433
	Before '33	467	60	168	1295	60	2923	202	228	1644	304	877	2196	133	101	250	168	697	121	143	217	945	282	1163	63	32999
	Unid.*	71	18	19	192	45	308	444	11	190	47	68	351	42	119	24	99	638	21	19	13	39	254	252	27	7157
	Total	1016	201	475	5296	1570	15342	1708	440	4504	850	1640	6195	686	664	491	1238	7266	358	400	1528	2474	846	3224	281	124931
	Total All Makes	388852	43732	113317	1095049	120144	2679409	636066	151754	2046502	498335	450525	2102722	185554	357292	178185	487259	1658752	169093	79088	565101	635356	314182	782484	79187	32730718

Unid.*—Unidentified as to year of manufacture. Data from the Reuben H. Donnelley Corp. are as of July 1, 1949.

For Summary of Cars in Use by Makes, by Year of Manufacture, see page 94

Exports

CARS • TRUCKS AND OTHER AUTOMOTIVE PRODUCTS

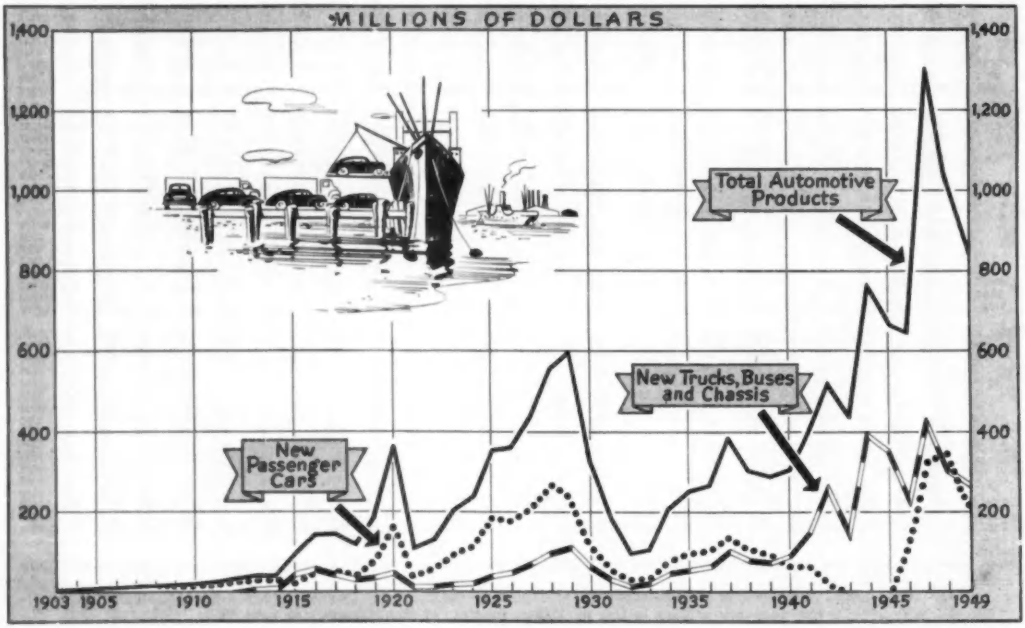
U. S. Exports of New Motor Vehicles, 1920-1949

In Units and Their Value and Including Lend-Lease

YEAR	PASSENGER CARS Number	PASSENGER CARS Value	PASSENGER CARS % of U. S. Production (Units)	TRUCKS, BUSES AND CHASSIS Number	TRUCKS, BUSES AND CHASSIS Value	TRUCKS, BUSES AND CHASSIS % of U. S. Production (Units)	TOTAL MOTOR VEHICLES Number	TOTAL MOTOR VEHICLES Value	TOTAL MOTOR VEHICLES % of U. S. Production (Units)
1920	142,508	165,255,921	7.5	29,136	46,775,781	9.1	171,644	212,031,702	7.7
1921	30,950	32,533,725	2.1	7,840	10,335,893	5.3	38,790	42,869,618	2.4
1922	66,791	51,049,816	2.9	11,443	8,270,708	4.2	78,234	59,320,524	3.0
1923	127,035	90,692,272	3.5	24,859	15,317,136	6.1	151,894	106,009,408	3.7
1924	151,380	112,534,729	4.7	27,352	19,199,344	6.6	178,732	131,734,073	4.9
1925	244,306	184,866,830	6.5	58,625	37,703,402	11.0	302,931	222,569,232	7.1
1926	238,540	176,432,157	6.3	66,880	47,176,107	21.1	305,420	223,608,264	7.1
1927	278,748	207,966,456	9.5	105,447	70,123,600	22.7	384,195	278,090,056	11.2
1928†	375,428	269,393,369	9.8	140,191	93,006,070	25.8	515,619	362,399,439	11.8
1929	346,630	239,334,000	7.5	197,872	112,607,985	25.6	544,502	351,941,985	10.1
1930	159,464	110,355,978	5.7	85,666	56,861,119	14.9	245,130	167,217,097	7.3
1931	86,437	52,851,585	4.3	49,415	26,210,975	11.8	135,852	79,062,560	5.6
1932	44,282	25,502,047	3.8	25,532	12,142,681	10.8	69,814	37,644,728	5.1
1933	67,355	33,945,464	4.2	44,103	20,691,338	12.7	111,458	54,636,802	5.8
1934	148,387	80,604,563	6.8	93,766	45,125,359	16.3	242,153	125,729,922	3.7
1935	179,470	99,342,411	5.5	100,668	51,995,938	14.4	280,138	151,338,349	7.0
1936	186,542	107,483,285	5.1	108,167	56,765,713	13.7	294,709	164,248,998	6.6
1937	237,719	140,638,203	6.0	169,076	102,889,939	18.9	406,795	243,528,142	8.4
1938	167,693	104,628,982	8.4	117,943	74,451,986	24.1	285,636	179,080,968	11.4
1939	143,909	87,171,300	5.0	116,913	71,422,015	16.4	260,822	158,593,315	7.2
1940	88,806	57,253,737	2.6	103,459	87,867,077	13.7	192,265	145,120,814	4.5
1941	81,746	60,702,648	2.4	147,132	148,149,880	13.9	228,878	208,852,528	5.0
1942	13,951	13,199,744	‡	156,344	258,241,298	19.1	170,295	271,441,042	...
1943	2,088	2,420,506	‡	74,847	145,772,105	10.7	76,935	148,192,611	...
1944	1,649	2,784,433	‡	175,080	399,795,242	23.8	176,729	402,579,675	...
1945	1,206	1,447,376	1.7	142,338	348,327,144	21.7	143,544	349,774,520	19.8
1946	116,994	122,500,568	5.4	167,980	225,929,505	17.8	284,974	348,430,073	9.2
1947	266,795	335,330,528	7.5	267,589	429,755,475	21.6	534,384	765,086,003	11.1
1948	217,911	279,837,012	5.6	204,831	343,160,170	14.8	422,742	709,592,487	8.0
1949	140,186*	205,022,791	2.7	133,963*	228,147,610	11.9	274,149*	433,170,401	4.4

‡ Taken from stockpiles. † From 1928 through 1941 exports include shipments to non-contiguous territories. * Does not include military vehicles for last six months of 1949.
NOTE—Prior to 1931 figures include used vehicles, but the effect of these used vehicles on per cent of production is negligible.
SOURCE—Machinery and Transportation Division, Office of Domestic Commerce, Department of Commerce from the records of Bureau of the Census.

1949 AUTOMOTIVE EXPORTS DECLINE 16.5% FROM 1948



U. S. Exports of New Trucks and Bus Chassis by Ton Rating*

From 1/4 Ton to Over 5 Tons With Diesel and Gasoline Types Over 2½ Tons

(For 1949 data by G.V.W. see page 106)

	1948		1947		1946		1945	
	Number	Value	Number	Value	Number	Value	Number	Value
¼ Ton and under	16,563	$16,350,618	27,003	$30,351,111	16,060	$16,320,496	3,143	$3,762,330
Over ¼ Ton, not over ½ Ton	19,660	22,130,203	16,299	15,213,168	6,962	6,990,682	1,707	1,626,267
Over ½ Ton and under 1 Ton	16,756	19,729,832	9,707	10,300,123	5,720	4,709,863	1,140	1,119,461
Ton	9,968	13,801,683	8,098	9,852,555	3,437	3,623,200	575	535,929
Over 1 Ton, not over 1½ Tons	73,607	99,007,045	99,282	123,421,351	83,999	91,106,565	50,166	76,454,247
Over 1½ Tons, not over 2½ Tons	49,448	87,434,142	80,667	124,597,159	33,729	40,179,303	63,596	157,965,261
Diesel, Over 2½ Tons, not over 4 Tons	1,341	14,753,741	1,268	10,064,297	258	965,149	115	290,606
Diesel, Over 4 Tons, not over 5 Tons	148	916,029	299	1,425,964	116	827,271	40	136,671
Diesel, Over 5 Tons	928	12,621,012	1,880	18,268,543	519	4,456,191	904	9,136,530
Gasoline, Over 2½ Tons, not over 4 Tons	6,538	28,122,427	11,198	32,119,297	9,749	26,806,852	12,846	36,001,667
Gasoline, Over 4 Tons, not over 5 Tons	1,992	12,091,420	3,363	14,670,625	2,255	9,033,277	2,233	9,238,671
Gasoline, Over 5 Tons	1,961	17,698,102	4,397	31,838,504	1,206	7,953,273	5,661	40,643,018
Bus Chassis	3,921	6,495,316	4,238	7,632,770	2,240	3,327,973	152	305,246
Total	204,831	$343,160,770	267,589	$429,755,475	168,250	$225,927,426	142,338	$348,148,144

* Machinery and Transportation Division, Office of Domestic Commerce, Department of Commerce from records of the Bureau of the Census.

U. S. Exports of Automotive Products, 1945-1949‡

Vehicles, Engines, Parts and Equipment

Type of Product	1949		1948		1947		1946		1945	
	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value
Passenger Car and Chassis, New	†140,186	$206,022,791	217,911	$279,837,012	266,795	$335,330,528	116,994	$122,500,568	1,208	$1,447,378
Passenger Car and Chassis, Used	4,235	6,147,501	4,641	7,854,289	10,987	16,870,001	2,482	2,671,977	1,560	1,756,678
Trucks, Buses and Chassis, New	†133,963	228,147,610	204,831	343,160,770	267,589	429,755,475	167,900	225,929,505	142,338	348,327,144
Trucks, Buses and Chassis, Used	2,989	4,151,393	2,226	3,534,560	7,980	17,094,701	10,203	14,334,370	5,435	7,956,699
Trailers, n.e.s.	3,059	4,647,659	6,093	6,719,248	19,151	21,452,243	14,138	8,729,268	3,320	3,293,363
Motorcycles	3,437	1,932,953	6,672	3,217,003	10,159	3,878,424	6,114	2,413,520	6,824	3,057,813
Total—New and Used Vehicles	287,889	$450,049,907	442,374	$644,322,882	582,661	$824,381,372	317,911	$376,579,208	160,683	$365,839,073
ENGINES										
Diesel, truck and bus for assembly	121	206,508	335	$505,959	817	$961,750	1,740	$1,379,333	370	$663,016
Gasoline, truck and bus for assembly	11,524	3,034,913	8,143	1,821,444	11,181	1,921,412	9,074	1,968,681	11,118	2,721,864
Passenger car for assembly	13,201	1,217,780	1,814	258,061	2,094	285,838	1,402	174,514	661	80,338
Diesel for replacement	1,283	2,140,129	1,135	1,490,685	2,112	2,060,133	973	904,697	285	412,671
Gasoline for replacement	15,353	3,640,183	12,291	2,859,261	16,552	3,348,983	13,106	3,357,715	8,262	1,752,013
Marine, outboard	12,389	1,873,851	12,302	1,783,556	43,639	4,403,259	6,558	705,575	4,427	1,072,145
Other marine	2,373	1,223,610	3,879	2,548,781	7,100	3,888,593	7,132	2,812,317	5,235	7,815,295
Total—Engines	56,224	$13,336,952	39,899	$11,267,746	83,495	$16,868,968	39,985	$11,302,832	30,358	$14,517,341
PARTS FOR ASSEMBLY		95,892,603		$86,474,518		$84,251,946		$50,776,001		$58,187,070
REPLACEMENT PARTS										
Motorcycle parts and accessories		976,856		$984,915		$994,028		$368,869		$1,955,881
Spark plugs	12,045,680	3,363,321	11,340,675	2,978,385	15,114,965	3,971,582	12,821,916	3,510,303	6,684,863	1,788,678
Parts for replacement, Other, n.e.s.		158,415,704		143,756,268		164,156,415		83,637,347		142,246,018
Auto horns, hand and electric	442,982	1,298,865	585,113	1,538,256	806,914	2,121,438	426,588	879,831	304,669	469,724
Auto accessories, n.e.s.		16,778,451		16,678,314		24,323,311		10,799,445		7,448,252
Brake lining, molded and semi-molded, lbs.*	3,086,024	2,641,045	2,601,413	2,238,135	3,308,517	2,907,716	2,495,990	1,837,752	2,185,463	1,580,852
Brake lining, not molded, lin. ft.*	763,961	479,645	681,364	404,065	949,449	552,244	740,670	368,680	353,028	236,099
Brake blocks, molded and semi-molded, lbs.*	284,200	275,293	238,853	188,368	570,080	448,214	411,932	297,784	285,113	218,374
Brake blocks, woven, lbs.*			223,282	26,809	54,386	45,951	28,146	23,603	7,374	7,715
Clutch facings, molded and semi-molded, units*	934,820	523,756	194,028	355,173	1,281,363	597,663	939,834	375,601	881,017	346,104
Clutch facings, woven, units*			373,979	195,764	356,037	197,025	256,407	124,445	479,829	209,891
Starting, Lighting and Ignition Equipment*		13,964,230		11,055,518		13,305,487		6,462,501		5,261,686
Batteries, storage, 6 and 12 volt*	470,839	6,602,796	622,198	7,284,940	606,166	6,631,115	407,425	2,949,777	720,925	6,813,114
Belts, fan for automobiles, lbs.			976,702	1,113,756	2,529,516	2,706,066	1,626,369	1,453,414	884,563	814,329
Total—Replacement Parts		$205,319,962		$188,798,686		$222,958,255		$113,089,372		$169,416,516
GARAGE EQUIPMENT										
Auto Tire Service Equipment and Parts		$607,846		$824,802		$1,933,512		$1,595,304		$1,059,965
Pumps for Gasoline and Oil	11,819	2,707,624	20,820	3,295,412	31,906	3,939,698	19,533	1,231,393	6,186	207,112
Service Appliances and Parts, Other		12,924,261		13,763,940		19,757,606		9,028,669		3,778,897
Total—Garage Equipment		$16,239,731		$17,884,154		$25,630,816		$11,855,366		$5,045,974
TIRES AND TUBES										
Casings, truck and bus	1,181,720	$45,599,866	1,154,456	$50,082,524	1,930,331	$76,190,044	1,406,289	$51,503,072	1,450,189	$48,694,154
Casings, other automobile	750,660	15,347,216	633,508	8,968,041	2,095,679	27,732,227	1,059,126	13,549,726	142,906	1,826,638
Inner tubes for cars, trucks and buses	1,386,555	4,585,102	1,201,469	4,445,408	2,978,396	10,440,833	1,873,214	7,429,495	1,317,815	4,200,261
Tires, solid for cars and trucks			111,232	3,092,000	271,490	6,717,979	42,678	1,284,752	15,249	550,857
Tire sundries and repair material, Camelback, lb.	1,883,006	541,203	1,395,244	397,160	6,888,664	1,692,256	6,733,524	1,768,631	1,795,595	453,777
Other Tire sundries and repair materials, lb.	1,933,368	1,243,461	1,861,586	947,065	5,423,489	2,629,818	5,922,499	3,205,636	2,633,709	1,411,183
Total—Tires and Tubes, etc.		$67,316,838		$67,932,198		$125,403,157		$78,741,312		$57,136,870
Total—All Products		$848,155,993		$1,016,680,164		$1,299,496,514		$642,344,091		$670,142,843

* For all uses.
† Excludes military vehicles for last six months.
‡ Machinery and Transportation Division, Office of Domestic Commerce, Department of Commerce, from records of Bureau of the Census.

U. S. Imports for Consumption, 1939-1949

Year	New Trucks Number	New Trucks Value	New Truck and Bus Chassis Number	New Truck and Bus Chassis Value	Other New Vehicles—Passenger Cars Number	Other New Vehicles—Passenger Cars Value	Other Used Vehicles or Chassis Number	Other Used Vehicles or Chassis Value	Total—New and Used Vehicles Number	Total—New and Used Vehicles Value
1939	...	$.......	1	$900	298	$376,960	335	$139,684	634	$517,544
1940	...	....	...	....	253	401,214	302	140,207	555	541,421
1941	3	4,607	...	....	50	52,165	308	153,304	361	210,076
1942	26	205,214	1	800	25	19,333	372	174,832	424	400,179
1943	50	75,438	9	13,500	74	90,067	217	96,378	350	99,579
1944	26	81,876	1	1,845	11	14,639	298	161,657	336	260,017
1945	4	5,451	1	756	51	80,162	475	366,719	531	453,088
1946	8	11,711	7	8,328	1,374	1,415,127	574	365,218	1,963	1,800,384
1947	18	28,521	4	6,543	1,453	1,742,473	646	510,618	2,121	2,288,155
1948	423	520,007	261	219,537	28,047	29,654,359	381	357,959	29,112	30,751,862
1949	458	605,857	57	78,358	7,543	8,623,783	308	285,170	8,366	9,593,168

U. S. Imports of New Passenger Cars*

Imports from	1949 Number	1949 Value	1948 Number	1948 Value
Canada	53	$72,714	122	$155,646
Mexico	3	7,775	2	1,745
Bahamas	1	1,009	......	....
Sweden	......	....	4	19,312
United Kingdom	7,209	8,266,741	25,228	27,026,866
Netherlands	1	3,964	3	9,392
Belgium	1	1,250	......	....
France	253	211,544	2,669	2,372,003
Germany	1	798	1	952
Italy	16	49,599	18	68,443
Switzerland	1	925	......	....
Australia	4	7,464	......	....
Total	7,543	$8,623,783	28,047	$29,654,359

U. S. Motorcycle Imports*

Imports from	1949 Number	1949 Value	1948 Number	1948 Value
Canada	14	$5,070	39	$19,338
Mexico	2	493	2	800
Canal Zone	......	....	2	225
United Kingdom	4,391	1,480,979	7,964	2,665,705
Sweden	......	....	1	228
Netherlands	2	140	3	650
Belgium	9	3,779	7	3,738
France	199	19,710	24	4,604
Germany	35	12,279	29	5,211
Austria	148	45,022	190	39,349
Czechoslovakia	280	64,693	3,509	647,707
Hungary	1	180	......	....
Italy	94	23,345	37	8,951
Gibraltar	......	....	1	250
India	1	250	......	....
Union of South Africa	......	....	1	300
Hong Kong	1	440	......	....
Australia	1	100	......	....
Total	5,178	$1,656,480	11,809	$3,397,056

* Machinery and Transportation Equipment Division, Office of Domestic Commerce from records of Bureau of the Census.

1949 U. S. Exports of New Trucks and Truck Chassis by G.V.W.*

G. V. W. Classifications	Number	Value
Gasoline		
5000 lb. and under	45,337	$54,149,620
5001-10,000 lb.	23,860	34,118,430
10,001-14,000 lb.	13,897	20,053,978
14,001-16,000 lb.	32,057	48,773,309
16,001-19,500 lb.	9,034	21,933,845
19,501 and over	4,749	23,181,873
Diesel and Semi-Diesel		
19,501 lb. and under	292	1,223,843
19,501 lb. and over	570	5,868,032
Total—All Trucks	129,796	$209,302,930

1948 Imports and Exports by Motor Vehicle Producing Countries*

	Passenger Cars Imports	Passenger Cars Exports	Trucks Imports	Trucks Exports	Buses Imports	Buses Exports	Total Imports	Total Exports
United States	28,047	217,911	684	204,831	(a)	(a)	28,731	422,722
Canada	17,037	27,277	3,348	20,901	227	....	20,612	48,178
Subtotal	45,084	245,188	4,032	225,732	227	....	49,343	470,900
Australia	61,646	....	26,517	....	(a)	....	88,163	....
Austria	648	....	361	10	30	....	1,039	10
Belgium	26,903	3,008(c)	10,276	1,274(c)	483	1	37,662	4,283
Czechoslovakia	331(b)	4,763(b)	102(b)	979(b)	13(b)	....	446	5,742
Denmark	2,518	904(c)	6,027	214(c)	(a)	(a)	8,545	1,118
Finland	1,105	....	3,687	....	(a)	....	4,792	....
France	1,596	58,764	431	19,835	(a)	780	2,027	79,379
Germany	....	6,089	....	682	....	10	....	6,781
Italy	126	13,627	24	5,705	....	....	150	19,332
Japan	282	1	820	2	....	....	1,102	3
Netherlands	14,473	778(c)	5,255	18(c)	678	3(c)	20,406	799
Spain	2,545	....	4,355	....	(a)	....	6,900	....
Sweden	8,554	686	4,142	102	(d)	(d)	12,696	788
Switzerland	23,946	70(c)	2,960	70	(a)	35	26,906	175
United Kingdom	180	226,911	2,058(d)	70,995	....	4,096	2,238	302,002
Subtotal	144,853	315,601	67,015	99,886	1,204	4,925	213,072	420,412
WORLD TOTAL	189,937	560,789	71,047	325,618	1,431	4,925	262,415	891,312

(a)—Included with trucks. (b)—First 8 months. (c)—Includes re-exports. (d)—Includes new and used trucks, industrial trucks and used cars.
(d)—Included with passenger cars. *—U. S. Department of Commerce.

Aviation Data

PRODUCTION • REGISTRATIONS • EXPORTS

Aircraft and Aircraft Engine Production

	AIRCRAFT				AIRCRAFT ENGINES	
	Civil†	Military†	Total‡	Value†	Number†	Value†
1927	1,386	609	1,995	14,504,999	1,400	$9,493,696
1928	3,499	847	4,346	....	3,496	19,916,000
1929	5,357	677	6,631	51,508,120	6,276	24,966,083
1930	1,937	747	2,684	....	4,356	17,267,795
1931	1,582	812	2,468	21,790,000	3,794	13,779,791
1932	549	593	1,142	....	1,959	8,902,808
1933	591	466	1,179	15,859,995	1,822	8,651,247
1934	1,222	393	1,615	....	2,545	15,825,000
1935	1,109	459	1,365	17,454,331	2,866	12,610,285
1936	2,152	858	3,010	....	4,295	26,383,055
1937	2,281	949	3,100	38,664,153	6,214	28,576,971
1938	2,698	925	3,623	....	....	....
1939	3,770	2,141	5,911	75,872,587	11,172	....
1940	6,785	6,019	12,794	146,000,000	22,667	101,000,000*
1941	6,844	19,433	26,277	819,000,000	58,181	436,000,000*
1942	N.P.	47,836	47,836	2,762,000,000	138,089	1,314,000,000*
1943	N.P.	85,898	85,898	6,696,000,000	227,116	2,226,000,000*
1944	N.P.	96,318	96,318	9,233,000,000	256,911	3,075,000,000*
1945	2,047	47,714	47,714	5,141,000,000	109,650	1,650,000,000*
1946	35,001	1,669	36,670	362,772,192	43,407	126,860,393
1947	15,617	2,100	17,717	671,432,478	21,178	246,406,195
1948	7,302	......	7,302§	114,207,590§	9,039§	30,017,250§
1949	3,545	......	3,545§	121,446,334§	3,982§	24,200,411§

N.P.—No production other than military. *—War Production Board and Civilian Production Administration. §—Civil production only.
†—Sources: Odd years 1919 through 1939, as reported by Census of Manufacturers. Other years, various sources. Total units produced 1940-1949 as reported by Civil Aeronautics Administration and Bureau of the Census. Value of airframes 1940-1945, Department of Commerce. ‡—Do not add up to totals shown because of difference in sources.
NOTE:—The values of engines, propellers and power plant accessories installed in the aircraft are not included in the value of the aircraft reported for 1931 to 1949.

Shipments of Complete Civil Aircraft and Other Products of Their Plants, 1949-1948*

In Units and Their Value

MONTH	Complete Aircraft Number		Complete Aircraft Value		Value of Aircraft Parts		Value of Other Products		Total Value of All Products	
	1949	1948	1949	1948	1949	1948	1949	1948	1949	1948
January	160	482	$ 3,566,883	$ 4,516,602	$ 3,284,292	$ 1,765,706	$ 1,495,899	$ 3,006,683	$ 8,347,074	$ 9,288,981
February	257	461	11,475,333	6,120,080	4,158,059	2,197,677	2,007,180	2,848,626	17,640,572	11,166,383
March	399	578	11,464,408	7,690,730	2,697,157	1,850,068	2,042,264	2,918,653	16,203,829	12,459,451
April	452	766	8,379,444	8,430,008	3,308,653	1,690,639	1,698,179	2,895,797	13,386,276	13,016,444
May	479	812	5,193,739	18,984,210	3,134,330	1,980,243	1,598,961	2,345,754	9,927,030	23,310,207
June	439	959	8,395,599	16,848,730	3,282,541	1,935,881	2,042,160	3,028,418	13,720,300	21,813,029
July	301	920	8,605,772	9,510,753	2,237,107	1,766,985	1,560,536	1,812,833	12,403,415	13,090,571
August	272	700	9,876,543	9,869,566	2,661,894	1,881,639	1,803,940	1,955,667	14,342,377	13,706,872
September	284	590	14,102,227	9,454,937	3,761,293	1,871,511	1,841,469	2,243,491	19,704,989	13,569,939
October	228	502	14,509,945	8,406,795	2,571,587	2,067,110	2,079,511	1,709,818	19,161,043	12,183,723
November	158	317	11,475,248	6,878,241	2,855,196	2,185,753	2,350,273	1,850,133	16,680,717	9,914,127
December	116	237	14,401,193	7,496,938	3,584,781	2,432,949	2,283,157	1,991,829	20,269,131	11,814,724
Total	3,545	7,302	$121,446,334	$114,207,593	$37,536,890	$22,826,161	$22,803,529	$28,607,702	$181,786,753	$165,334,461

*—Industry Division, Bureau of the Census and Civil Aeronautics Administration.

Shipments of Civil Aircraft Engines and Other Products of Their Plants, 1949-1948*

In Units and Their Value

MONTH	Civil Aircraft Engines Number		Civil Aircraft Engines Value		Value of Engine Parts		Value of Other Products		Total Value of All Products	
	1949	1948	1949	1948	1949	1948	1949	1948	1949	1948
January	265	779	$ 1,351,488	$ 3,149,199	$ 1,732,690	$ 1,572,186	$ 151,119	$ 68,658	$ 3,235,297	$ 4,790,043
February	469	1,007	1,478,652	3,562,073	1,901,277	1,818,472	118,124	73,488	3,498,053	5,454,033
March	504	1,093	1,163,978	2,872,478	2,226,039	2,302,297	297,456	89,527	3,687,473	5,264,302
April	603	975	1,120,697	3,220,452	2,149,631	2,014,309	126,615	285,699	3,396,943	5,520,460
May	479	1,293	1,364,579	2,922,932	2,100,726	1,878,590	233,481	268,972	3,698,786	5,070,494
June	364	1,458	1,110,431	6,543,817	2,672,850	2,347,919	375,903	300,162	4,159,184	9,191,898
July	286	641	1,060,200	1,088,043	1,817,557	2,115,412	440,811	169,738	3,318,568	3,373,193
August	283	660	739,855	1,484,958	1,457,978	1,990,784	349,325	173,649	2,547,158	3,649,391
September	200	428	1,170,247	1,877,993	1,926,959	2,458,247	375,813	122,650	3,473,019	4,458,890
October	174	220	1,050,735	787,120	1,976,257	1,720,481	428,576	111,138	3,455,568	2,618,739
November	192	193	963,708	1,169,904	1,942,285	2,036,197	354,958	113,362	3,260,951	3,319,463
December	168	312	1,662,239	1,338,281	1,737,979	1,945,517	1,145,894	146,026	4,546,112	3,429,824
Total	3,987	9,069	$14,236,809	$30,017,280	$23,642,228	$24,200,411	$4,398,075	$1,923,089	$42,277,112	$82,279,194

*—Industry Division, Bureau of the Census and Civil Aeronautics Administration

Civil Aircraft Shipments—by Months—1949-1948*

Classified by Total Rated Hp and Number of Places

Month	Total Rated Horsepower						Total Aircraft		Number of Places					
	1-99 hp		100-399 hp		400 & Over hp				1-2 Places		3-5 Places		Over 5 Places	
	1949	1948	1949	1948	1949	1948	1949	1948	1949	1948	1949	1948	1949	1948
January	36	211	114	236	10	15	160	462	37	229	114	220	9	13
February	66	196	159	250	32	16	257	461	72	221	154	226	31	14
March	105	292	269	270	25	16	399	578	113	337	263	227	23	14
April	124	428	310	316	18	22	452	766	132	461	304	289	16	16
May	140	309	326	467	13	36	479	812	145	337	321	441	13	34
June	130	448	300	476	9	35	439	959	141	482	289	444	9	33
July	67	442	227	459	7	19	301	920	71	473	223	430	7	17
August	77	208	187	465	8	27	272	700	84	242	180	432	8	26
September	77	185	193	382	14	23	284	590	81	208	190	361	13	21
October	45	135	170	340	13	27	228	502	49	156	167	320	12	26
November	31	90	112	204	15	23	158	317	37	99	106	195	15	23
December	32	47	74	161	10	27	116	235	34	57	72	152	10	26
Total	930	2,990	2,441	4,026	174	286	3,545	7,302	986	3,302	2,393	3,737	166	263

* Industry Division, Bureau of the Census and Civil Aeronautics Administration.

Personal and Transport Aircraft Shipments, 1949-1948*

In Units and Their Value

Month	Personal Planes				Transport Planes				Total Civil Aircraft			
	Number		Value		Number		Value		Number		Value	
	1949	1948	1949	1948	1949	1948	1949	1948	1949	1948	1949	1948
January	151	449	$936,784	$2,018,069	9	13	$2,630,099	$2,496,533	160	462	$3,566,883	$4,516,602
February	226	447	1,189,788	2,125,996	31	14	10,285,545	3,994,084	257	461	11,475,333	6,120,080
March	376	564	1,876,418	2,491,739	23	14	9,567,990	5,198,991	399	578	11,444,408	7,690,730
April	436	750	2,138,844	3,028,139	16	16	6,240,600	5,401,869	452	766	8,299,444	8,430,008
May	461	778	1,910,984	3,164,874	18	34	3,282,755	15,819,336	479	812	5,180,503	18,984,210
June	430	926	1,848,133	3,783,096	9	33	6,547,466	13,056,634	439	959	8,395,599	16,848,730
July	563	903	2,380,878	3,432,040	10	17	16,101,437	6,078,713	301	920	8,605,772	9,510,753
August		674		2,854,639		26		7,014,927	272	700	9,876,543	9,869,566
September	271	569	1,318,575	2,683,630	13	21	12,783,652	6,771,307	284	590	14,102,227	9,454,937
October	216	476	1,114,544	2,219,670	12	26	13,395,401	6,187,125	228	502	14,509,945	8,406,795
November	143	294	746,137	1,384,858	15	23	10,729,111	5,493,383	158	317	11,475,248	6,878,241
December	106	209	639,060	1,107,600	10	26	13,762,143	6,389,338	116	235	14,401,193	7,496,938
Total	3,379	7,039	$16,100,135	$30,294,350	166	263	$105,346,199	$83,913,240	3,545	7,302	$121,333,098	$114,207,590

* Industry Division, Bureau of the Census and Civil Aeronautics Administration.

Number of Employees in Complete Aircraft and Aircraft Engine Plants, 1948-1949*

	Aircraft Plants			Engine Plants		
	Total Plant Employees	Production and Related Workers	Other Plant Employees	Total Plant Employees	Production and Related Workers	Other Plant Employees
1948						
January	148,062	108,097	39,965	32,953	23,329	9,624
February	148,692	109,094	39,598	32,934	23,288	9,646
March	148,402	110,133	38,269	33,141	23,254	9,887
April	150,768	110,497	40,271	33,141	23,539	9,902
May	137,107	97,350	39,757	34,043	24,041	10,002
June	141,050	100,057	40,993	34,741	24,044	10,694
July	145,273	103,826	41,447	34,833	23,983	10,850
August	149,482	106,846	42,636	34,967	23,938	11,029
September	152,429	109,824	42,605	36,385	24,152	11,233
October	160,852	117,290	43,562	37,357	25,906	11,451
November	165,152	121,542	43,610	37,994	26,374	11,620
December	166,687	122,557	44,130	38,427	26,693	11,734
1949						
January	166,506	123,680	42,826	39,846	27,958	11,888
February	167,282	123,517	43,765	40,221	28,340	11,881
March	169,210	125,355	43,855	40,761	28,823	11,938
April	169,310	125,198	44,112	41,500	29,215	12,285
May	168,287	124,190	44,097	41,656	29,287	12,369
June	167,441	124,561	42,880	41,180	29,071	12,109
July	171,315	127,204	44,111	40,703	28,669	12,034
August	171,070	127,287	43,783	35,676	24,060	11,616
September	168,533	124,995	43,538	41,244	29,335	11,909
October	165,695	122,539	43,156	40,991	29,035	11,956
November	163,343	119,182	44,161	40,569	28,732	11,837
December	163,145	119,151	43,994	39,961	28,145	11,816

* Industry Division, Bureau of the Census and Civil Aeronautics Administration.

Airports and Landing Fields, by Types, by Years*

(As of the End of the Calendar Year)

Year	Commercial	Municipal	CAA Intermediate	All† Others	Total Airports	Total Lighted Airports
1933	938	827	265	158	2,188	626
1934	872	980	259	186	2,297	664
1935	822	1,041	291	214	2,368	698
1936	774	1,037	296	235	2,342	705
1937	727	1,053	283	236	2,299	720
1938	760	1,092	267	255	2,374	719
1939	801	963	266	250	2,280	735
1940	860	1,031	289	151	2,331	776
1941	930	1,086	283	185	2,484	662
1942	1,069	1,129	273	338	2,809	700
1943	801	914	240	814	2,769	859
1944	1,027	1,067	229	1,104	3,427	964
1945	1,509	1,220	216	1,081	4,026	1,007
1946	1,929	1,424	201	936	4,490	1,019
1947	2,849	1,818	178	914	5,759	1,447
1948	2,989	2,050	161	1,214	6,414	.....
1949	2,585	2,200	139	1,560	6,484	.....

*—Civil Aeronautics Administration †—Includes Military

Civil Aircraft Registrations—Airports in Use*

State	U. S. Civil Aircraft				Airports by Types, January 1950 (1)					
	January 1, 1950	July 1, 1949	January 1, 1949	January 1, 1947	Commercial	Municipal	CAA Intermediate	Military	All Others	Total Airports
Alabama	924	1,003	998	906	32	32	2	15	10	91
Arizona	1,170	1,248	1,164	885	31	42	4	30	72	179
Arkansas	1,192	1,157	1,078	890	38	32	0	0	18	88
California	10,594	10,639	10,221	8,456	178	152	8	44	127	509
Colorado	1,265	1,370	1,313	1,088	33	54	3	3	16	109
Connecticut	698	730	755	635	24	10	0	0	0	34
Delaware	277	235	247	215	12	2	0	1	2	17
District of Columbia	533	877	933	986	0	0	0	2	1	3
Florida	2,548	2,909	2,907	2,572	47	90	1	48	5	191
Georgia	1,264	1,513	1,530	1,346	33	54	4	10	33	134
Idaho	873	816	718	545	14	71	3	1	35	124
Illinois	4,829	4,675	4,503	3,705	113	32	3	6	19	173
Indiana	2,733	2,772	2,718	2,269	114	34	1	4	7	160
Iowa	2,447	2,373	2,190	1,734	77	52	2	2	50	183
Kansas	2,795	3,099	2,719	2,410	66	97	3	9	25	190
Kentucky	821	888	835	686	35	14	1	2	15	67
Louisiana	1,066	1,057	984	760	23	28	4	4	20	79
Maine	650	641	605	491	30	25	0	3	7	65
Maryland	810	1,115	1,184	1,468	28	5	0	7	11	51
Massachusetts	1,398	1,454	1,454	1,256	52	23	0	4	2	81
Michigan	4,249	4,717	4,686	3,779	105	118	0	5	22	250
Minnesota	2,112	2,132	2,073	1,798	45	79	0	1	2	127
Mississippi	690	726	720	612	30	33	4	6	14	87
Missouri	2,140	2,432	2,404	2,171	59	47	5	3	7	121
Montana	1,088	956	845	656	14	69	8	1	17	109
Nebraska	1,794	1,697	1,534	1,139	43	67	3	1	23	137
Nevada	384	427	422	383	20	21	6	3	16	66
New Hampshire	288	318	304	244	17	12	0	1	6	36
New Jersey	1,682	1,670	1,650	1,393	70	13	0	5	6	94
New Mexico	744	806	795	617	30	31	11	8	28	108
New York	4,472	4,827	4,797	4,107	138	46	2	6	75	267
North Carolina	1,714	1,830	1,817	1,579	85	36	1	12	12	146
North Dakota	1,235	972	851	579	38	60	6	0	29	133
Ohio	4,144	4,672	4,789	4,448	178	36	4	4	30	252
Oklahoma	2,284	2,479	2,368	1,862	50	80	1	4	13	148
Oregon	1,809	1,771	1,619	1,227	36	42	2	6	35	117
Pennsylvania	4,063	4,557	4,303	3,838	161	43	2	5	7	218
Rhode Island	198	212	199	181	7	2	0	2	0	11
South Carolina	705	836	836	760	18	38	2	6	3	65
South Dakota	979	834	746	605	22	42	1	1	3	69
Tennessee	1,106	1,308	1,306	1,216	38	21	6	2	8	74
Texas	8,983	8,148	8,347	7,709	182	109	13	81	262	647
Utah	519	549	542	468	7	37	8	4	4	60
Vermont	201	205	187	144	12	9	0	1	1	23
Virginia	1,390	1,483	1,437	1,220	63	24	2	14	22	125
Washington	2,229	2,182	2,043	1,616	53	67	4	12	42	178
West Virginia	670	685	660	567	27	14	2	0	16	59
Wisconsin	2,126	2,163	2,013	1,731	88	60	2	0	24	172
Wyoming	525	476	428	326	12	33	5	0	7	57
Outside of U. S.	1,802	......	947	654	.....	.....	.....	.....	.....	.....
Total	92,622	96,730	94,821	81,002	2,585	2,200	139	353	1,207	6,484

(1)—**Airport type definitions:**—Commercial—Public use and public services, privately owned and operated. Municipal—Public use and public service, municipally owned and/or operated. CAA Intermediate—Public emergency use, no services, CAA operated. Military—Public restricted, military operated. All Others—Public emergency use only, no public services, privately owned for personal use. *—Civil Aeronautics Administration.

U. S. Exports of Aeronautic Products, by Years, 1912-1949*

	Aircraft		Aircraft Engines		Parts, Accessories and Equipment	Total Aeronautic Exports
	Number	Value	Number	Value	Value	Value
1912	29	$105,805	......	......	......	$105,805
1913	29	81,750	......	......	$25,802	107,552
1914	34	188,924	......	......	37,225	226,149
1915	152	958,019	......	......	583,427	1,541,446
1916	269	2,158,395	......	......	4,843,610	7,002,005
1917	135	1,001,542	......	......	3,133,903	4,135,445
1918	61	768,720	......	......	18,017,781	18,786,501
1919	44	215,300	......	......	3,249,226	3,464,526
1920	65	598,274	......	......	554,375	1,152,649
1921	48	314,940	......	......	157,608	472,548
1922	37	156,630	147	$72,819	265,481	494,930
1923	48	309,051	80	65,558	58,949	433,558
1924	59	412,738	146	219,609	165,926	798,273
1925	80	511,282	73	170,793	101,584	783,659
1926	50	303,149	297	573,732	150,329	1,027,210
1927	63	848,568	84	484,875	570,117	1,903,650
1928	162	1,759,653	179	664,826	1,240,244	3,664,723
1929	348	5,484,600	322	1,383,197	2,257,548	9,125,345
1930	321	4,819,669	376	1,634,985	2,363,456	8,818,110
1931	140	1,812,809	307	1,432,229	1,622,649	4,867,687
1932	280	4,358,967	2,356	1,517,682	1,756,421	7,946,533
1933	406	5,391,493	2,903	1,452,341	2,249,172	9,180,328
1934	490	8,195,484	1,009	4,458,701	4,860,567	17,622,938
1935	333	6,598,515	568	2,459,317	5,069,810	14,290,843
1936	527	11,601,893	933	5,182,469	6,060,483	23,143,203
1937	631	21,085,170	1,048	5,946,054	12,105,474	39,404,469
1938	876	37,977,924	1,309	7,899,844	21,948,982	68,227,689
1939	1,221	67,112,866	1,880	14,120,035	36,574,311	117,807,212
1940	3,531	196,265,646	4,986	49,873,823	65,732,004	311,871,473
1941	6,011	422,763,907	8,144	81,692,907	122,472,538	626,929,352
1942	14,603	882,247,253	14,603	160,575,340	352,123,928	1,394,946,521
1943	13,885	1,216,900,646	21,803	243,649,570	684,061,278	2,144,611,494
1944	24,489	1,657,692,974	25,751	335,085,521	833,150,100	2,825,928,595
1945	7,672	664,105,257	9,351	126,209,929	373,294,565	1,163,609,751
1946	2,406	65,293,732	2,490	11,851,372	38,178,056	115,323,160
1947	3,163	74,501,393	4,138	18,075,058	79,567,847	172,144,298
1948	2,262	66,358,190	3,924	14,337,146	76,118,924	156,814,260
1949[1]	1,278	36,392,483	2,197	7,718,774	86,691,956	130,803,213

* Machinery & Transportation Equipment Division, Office of Domestic Commerce from records of Bureau of Census.
[1] Includes some data for first six months only.

U. S. Exports of Aeronautic Products*

Segregated by Type of Product for 1946-1949

Type of Product	1949		1948		1947		1946	
	Number	Value	Number	Value	Number	Value	Number	Value
AIRCRAFT								
Airplanes, civil, new and used	756	$ 3,349,604	1,153	4,807,847	1,942	$ 7,159,693	2,243	$ 64,200,532
Bombers	.....	.....	40	547,000	38	457,500	.....	.....
Fighters	75	665,000	35	310,000	47	410,000	16	12,800
Transports, new and used, cargo and passenger	124	26,739,325[1]	505	56,239,597	500	60,103,435	2	215,932
Trainers	278	4,456,673	478	2,467,084	563	5,131,844	41	828,485
Miscellaneous aircraft	14	1,930	3	50,000	.....	.....	50	2,500
Gliders: Lighter-than-air, rotary wing	31	1,179,951	50	1,936,662	73	1,238,921	54	33,483
Total—Aircraft	1,278	$ 36,392,483	2,262	$ 66,358,190	3,163	$ 74,501,393	2,406	$ 65,293,732
AIRCRAFT ENGINES	2,197	$ 7,718,774	2,932	$ 14,337,146	4,138	$ 18,075,058	2,490	$ 11,851,372
PARTS AND ACCESSORIES								
Engine parts and accessories	.....	$34,078,678	.....	$28,509,469	.....	$ 8,838,297	.....	$ 12,855,378
Propellers	1,943	2,912,433	1,983	1,848,867	2,479	1,975,795	1,594	1,007,234
Propeller parts and accessories	.....	2,775,848	.....	1,612,047	.....	1,553,331	.....	767,593
Direction and range finders	50	150,457[1]	46	10,439	.....	4,998,215	.....	2,192,365
Bomb sights and parts	.....	.....	.....	1,373	.....	.....	.....	245
Parachutes and other aerial delivery equipment	.....	131,128[1]	.....	1,590,174	.....	10,941,700	.....	783,697
Radio transmitters and receiving sets	1,123	491,746	3,401	1,362,479	.....	.....	2,119	3,272,752
Radio ground equipment	.....	725,754[1]	.....	1,802,972	.....	.....	.....	.....
Ground handling and maintenance equipment	.....	2,165,441	.....	2,242,986	.....	2,631,716	.....	.....
Aircraft parts and components	.....	38,706,740	.....	33,021,055	.....	26,670,346	.....	.....
Flight, operation and engine instruments	.....	4,555,733	.....	4,150,217	.....	1,958,447	.....	17,298,794
Total—Parts and Accessories	.....	$ 86,541,499	.....	$ 76,152,078	.....	$ 79,567,847	.....	$ 38,178,056
Total—Aeronautic Exports	.....	$130,803,213	.....	$156,847,414	.....	$172,144,298	.....	$115,323,160

* Machinery and Transportation Equipment Division, Office of Domestic Commerce from records of Bureau of Census.
[1] Data for first 6 months only.

ENGINE TRENDS

(Averages for Passenger Cars and Their Engines—Based on Sales)

IN 16 YEARS
Increase in Hp
92%
Increase in Car Weight
18%
(Based on New Registrations)

	No. of Units Sold*	Gross Shipping Wgt. of Cars Sold (lb)†	Gross Max. Hp of Cars Sold‡	Average Weight (lb)	Average Hp
1930	2,625,979	7,320,000,000	142,800,000	2,780	54
1931	1,908,141	5,380,000,000	109,200,000	2,820	57
1932	1,096,399	3,200,000,000	75,400,000	2,920	69
1933	1,493,794	4,220,000,000	106,000,000	2,820	71
1934	1,888,557	5,560,000,000	156,000,000	2,940	83
1935	2,743,908	8,120,000,000	234,000,000	2,960	85
1936	3,404,497	10,190,000,000	291,000,000	3,000	86
1937	3,483,752	10,470,000,000	303,900,000	3,005	87
1938	1,891,021	5,743,000,000	169,200,000	3,035	89
1939	2,653,377	7,950,000,000	239,200,000	2,996	90
1940	3,415,905	10,511,000,000	312,100,000	3,077	91
1941	3,731,166	11,793,000,000	356,800,000	3,161	96
1946	1,815,196	599,600,000	181,200,000	3,303	100
1947	3,167,231	10,528,700,000	317,400,000	3,324	100
1948	3,490,952	11,552,200,000	352,600,000	3,309	100
1949	4,838,342	15,901,000,000	500,100,000	3,286	104

†—Shipping weight of 5 passenger, 4 door sedan taken as typical and used in conjunction with new registrations of each model.

‡—Maximum horsepower taken from previous Statistical Issues and used in conjunction with new registrations of each model; *—R. L. Polk & Co. registrations of new passenger cars.

Eighteen Years' Progress in Engine Design

(Average for Passenger Car Engines—Based on Number of Chassis Models Offered)

	Average Hp per Cu. in. of Displacement
1930	.331
1931	.344
1932	.353
1933	.376
1934	.388
1935	.398
1936	.411
1937	.417
1938	.412
1939	.415
1940	.426
1941	.431
1942	.446
1946	.440
1947	.437
1948	.437
1949	.453
1950	.455

	Average Compression Ratio
1930	5.15
1931	5.23
1932	5.29
1933	5.57
1934	5.72
1935	5.98
1936	6.14
1937	6.25
1938	6.32
1939	6.32
1940	6.41
1941	6.63
1942	6.60
1946	6.77
1947	6.73
1948	6.78
1949	6.93
1950	7.00

	Average B. M. E. P. at Maximum Hp. (lb. per sq. in.)
1930	82.7
1931	84.3
1932	86.2
1933	88.5
1934	90.1
1935	90.2
1936	92.3
1937	93.1
1938	91.2
1939	92.7
1940	93.9
1941	96.7
1942	98.5
1946	94.6
1947	94.5
1948	95.3
1949	97.3
1950	98.6

Bore, Stroke and Displacement	Bore (In.)	Stroke (In.)	Disp. (Cu. In.)
1930	3.26	4.51	264.6
1931	3.21	4.45	273.0
1932	3.26	4.41	283.9
1933	3.23	4.40	284.1
1934	3.24	4.40	289.2
1935	3.23	4.39	271.4
1936	3.39	4.32	267.9
1937	3.25	4.31	277.6
1938	3.25	4.27	271.1
1939	3.24	4.23	255.3
1940	3.25	4.17	254.0
1941	3.26	4.15	252.1
1942	3.26	4.18	251.8
1946	3.27	4.11	246.4
1947	3.28	4.18	250.4
1948	3.29	4.12	247.1
1949	3.35	4.10	250.0
1950	3.37	4.11	256.1

	Average Piston Speeds (Ft. per Min.)
1930	2380
1931	2395
1932	2390
1933	2463
1934	2508
1935	2535
1936	2498
1937	2554
1938	2545
1939	2498
1940	2490
1941	2492
1942	2534
1946	2522
1947	2550
1948	2492
1949	2522
1950	2505

	Average Disp. per Cylinder (Cu. In.)
1930	37.6
1931	36.8
1932	36.7
1933	36.0
1934	36.2
1935	36.1
1936	35.6
1937	35.8
1938	35.7
1939	35.1
1940	35.0
1941	35.2
1942	34.9
1946	35.4
1947	35.8
1948	35.6
1949	36.8
1950	37.2

	Average Number of Cylinders
1930	7.04
1931	7.49
1932	7.78
1933	7.88
1934	7.97
1935	7.51
1936	7.50
1937	7.74
1938	7.60
1939	7.28
1940	7.25
1941	7.15
1942	7.20
1946	6.97
1947	7.00
1948	6.95
1949	6.80
1950	6.88

	Average R.P.M. at Max. B.H.P.
1930	3170
1931	3230
1932	3250
1933	3360
1934	3420
1935	3480
1936	3487
1937	3556
1938	3576
1939	3543
1940	3580
1941	3603
1942	3638
1946	3682
1947	3660
1948	3629
1949	3690
1950	3657

	Average Brake Horsepower
1930	87.6
1931	95.0
1932	101.0
1933	106.5
1934	112.5
1935	109.6
1936	110.1
1937	115.9
1938	111.7
1939	105.9
1940	107.9
1941	110.9
1942	112.5
1946	108.4
1947	109.4
1948	107.9
1949	113.3
1950	116.6

Current Passenger Car Price, Weight and Body Table

Following are prices at factory for cars with standard equipment as of March 1, 1950. State or local taxes, transportation and finance charges and optional equipment are extra.

Body Make and Model	List Price at Factory without Federal Taxes	Federal Taxes and Handling Charges	Delivered Price at Factory including Federal Taxes	Shipping Weight
BUICK				
Special 40				
Bus. Coupe	1680	123	1803	3615
Sedanet	1730	126	1856	3655
Sedanet, DeL.	1770	129	1899	3665
Sedan, 4d	1780	129	1909	3715
Tour. Sed., 4d	1810	131	1941	3710
Sed., DeL., 4d	1820	132	1952	3720
Tour. Sed., DeL., 4d	1850	133	1983	3735
Super 50				
Sedanet	1896	145	2041	3645
Riviera	1988	151	2139	
Tour. Sed., 4d	1989	150	2139	3745
Sedan, 4d	2058	154	2212	3870
Conv. Coupe	2308	168	2476	
Est. Wagon	2858	186	2044	4115
R'dmaster 70				
Sedanet	2343	185	2528	4025
Tour. Sed., 4d	2443	190	2633	4135
Sedan, 4d	2543	195	2738	4220
Riviera	2653	201	2854	
Conv. Coupe	2773	208	2981	
Est. Wagon	3178	229	3407	4470
CADILLAC				
Series 61				
Club Coupe, 2d	2590	171	2761	
Tour. Sedan, 4d	2690	176	2866	3870
Series 62				
Coupe	2960	190	3150	
Sedan	3040	194	3234	4010
Cpe. de Ville	3315	208	3523	
Conv. Coupe	3440	214	3654	
Series 60				
Sedan, 4d	3665	132	3797	4150
Series 75				
Sedan, 7p, 4d	4480	290	4770	
Imperial	4660	299	4959	
CHEVROLET				
Styleline HJ				
Bus. Coupe	1240	89	1329	3025
Sedan, 2d	1310	93	1403	3085
Spt. Coupe	1315	93	1408	3050
Sedan, 4d	1355	95	1450	3120
Fl'tline HJ				
Sedan, 2d	1310	93	1403	3080
Sedan, 4d	1355	95	1450	3115
Styleline HK				
Sedan, 2d	1385	97	1482	3100
Spt. Coupe	1400	98	1498	3030
Sedan, 4d	1430	99	1529	3150
Conv. Coupe	1730	117	1847	3380
Bel Air Coupe	1630	111	1741	3295
Sta. Wag. Steel	1870	124	1994	3460
Fl'tline HK				
Sedan, 2d	1385	97	1482	3115
Sedan, 4d	1430	99	1529	3145
CHRYSLER‡				
Royal 6				
Club Coupe	2002	112	2114	3560
Sedan, 4d, 6p	2021	113	2134	3655
Sedan, 4d, 8p	2705	150	2855	4190
Sta. Wagon, 9p	2998	165	3163	
Windsor 6				
Club Coupe	2186	122	2308	3670
Sedan, 4d, 6p	2206	123	2329	3765
Conv. Coupe	2598	143	2741	3905
Sedan, 4d, 8p	2890	160	3050	4295
Limousine	3010	166	3176	4400
Saratoga 8				
Club Coupe	2478	138	2616	4110
Sedan, 4d, 6p	2503	139	2642	4170
New Yorker 8				
Club Coupe	2588	144	2732	4110
Sedan, 4d, 6p	2613	145	2758	4190
Conv. Coupe	3069	169	3238	4360
Twn. and Cty. 8				
Newport	3795	208	4003	4670
Crown Imp.				
Sedan, 4d, 8p	4970	259	5229	5235
Limousine, 8p	5070	264	5334	5305
CROSLEY				
Sedan, 2d	803	63	866	1363
Convertible	803	63	866	1320
Sta. Wagon	829	65	894	1403
Hotshot Rdst.	799	62	861	1175
DE SOTO‡				
De Luxe				
Club Coupe	1871	105	1976	3450
Sedan, 4d	1881	105	1986	3525
Carry-All	2075	116	2191	3600
Custom				
Club Coupe	1812	102	1914	3300
Sedan, 4d, 6p	2059	115	2174	3640
Convertible	2443	135	2578	3815
Sedan, 8p	2713	150	2863	4115
Sta. Wagon	2932	161	3093	4400
Suburban	3013	166	3179	
DODGE‡				
Wayfarer, D33				
Coupe, 3p	1525	86	1611	3095
Roadster, 3p	1635	92	1727	3190
Sedan, 2d				3200
Meadowb'k D34				
Sedan	1750	98	1848	3395
Coronet D34				
Club Coupe	1812	102	1914	3330
Sedan, 4d	1825	102	1927	3410
Twn. Sedan	1905	107	2012	3410
Conv. Coupe	2206	123	2329	3590
Sta. Wagon				
Sedan, 8p	2479	138	2617	4045
FORD				
Six				
Bus. Coupe	1236	97	1333	2871
Tudor	1323	102	1425	2945
Fordor	1368	104	1472	2990
Custom 6				
Tudor	1405	106	1511	2948
Club Coupe	1405	106	1511	2928
Fordor	1450	109	1559	2993
Eight				
Sta. Wagon	1895			
Bus. Coupe	1318	102	1420	2911
Tudor	1393	106	1499	2985
Fordor	1438	108	1546	3030
Custom 8				
Tudor	1480	110	1590	2988
Club Coupe	1485	111	1596	2968
Fordor	1525	113	1638	3033
Conv. Coupe	1820	129	1949	3274
Sta. Wagon	1970	146	2264	3563
FRAZER				
Sedan	2264	131	2395	3455
Manhattan	2446	149	2595	3514
HUDSON				
Pacemaker				
Coupe, 3p.	1675	132	1807	
Brougham	1775	137	1912	3475
Coupe, 6p.	1795	138	1933	3460
Sedan, 4d.	1795	138	1933	3510
Super 6				
Brougham	1925	143	2068	3565
Club Coupe	1957	145	2102	3555
Sedan, 4d	1960	145	2105	3590
Conv. Brghm.	2456	172	2628	3750
Commodore 6				
Club Coupe	2105	152	2257	3640
Sedan, 4d	2128	153	2281	3655
Conv. Brghm.	2628	181	2809	3840
Super 8				
Brougham	2005	147	2152	3575
Club Coupe	2037	149	2186	3580
Sedan, 4d	2040	149	2189	3605
Commodore 8				
Club Coupe	2185	156	2341	3655
Sedan, 4d	2208	157	2365	3675
Conv. Brghm.	2708	185	2893	3865
KAISER				
Special	1869	126	1995	3345
Traveler	1958	130	2088	
De Luxe	2064	131	2195	3400
Virginian	2826	169	2995	
LINCOLN				
Coupe, 6p	2350	177	2527	3959
Spt. Sedan, 4d.	2395	180	2575	4009
Convertible	2910	206	3116	4224
Cosmopolitan				
Coupe	2975	210	3185	4194
Twn. Sedan	3025	213	3238	4274
Spt. Sedan	3025	213	3238	4259
Convertible, 6p	3700	248	3948	4419
MERCURY				
Coupe, 6p	1845	134	1979	3321
Spt. Sedan, 4d	1895	136	2031	3386
Convertible, 6p	2255	155	2410	3591
Sta. Wagon	2397			3626
NASH				
Statesman				
Bus. Cpe., 2d	1523	110	1633	2900
Super				
Sedan, 2d	1598	115	1713	2930
Club Cpe., 2d	1620	115	1735	2940
Sedan, 4d	1623	115	1738	2965
Custom				
Sedan, 2d	1748	124	1872	
Club Cpe., 2d	1770	124	1894	
Sedan, 4d	1773	124	1897	2990
Ambassador				
Super				
Sedan, 2d	1904	135	2039	3325
Club Cpe., 2d	1925	135	2060	3335
Sedan, 4d	1929	135	2064	3350
Custom				
Sedan, 2d	2054	144	2198	
Club Cpe., 2d	2075	144	2219	
Sedan, 4d	2079	144	2223	3390
OLDSMOBILE				
Series 76-6				
Club Coupe	1600	119	1719	3260
Club Sedan	1625	120	1745	3280
Sedan, 2d	1640	121	1761	3290
Club Cpe., DeL.	1665	122	1787	3280
Club Sed., DeL.	1690	123	1813	3285
Sedan, 4d	1695	124	1819	3320
Sed., 2d, DeL.	1705	124	1829	3295
Sed., 4d, DeL.	1760	127	1887	3340
Hol. Coupe	1870	133	2003	
Hol., Cpe., DeL.	1970	138	2108	3385
Conv. Coupe	1995	140	2135	3585
Sta. Wgn., DeL.	2345	159	2504	3615
Series 88-8				
Club Coupe	1745	133	1878	3435
Club Sedan	1770	134	1904	3475
Sedan, 2d	1785	135	1920	3485
Club Cpe., DeL.	1820	136	1956	3455
Sedan, 4d	1840	138	1978	3515
Club Sed., DeL.	1845	137	1982	3485
Sed., 2d, DeL.	1860	138	1998	3500
Sed., 4d, DeL.	1915	141	2056	3520
Hol. Coupe	2015	147	2162	
Hol. Cpe., DeL.	2115	152	2267	3565
Conv. Coupe	2140	154	2294	3745
Sta. Wgn., DeL.	2490	172	2662	3780
Series 98-8				
Club Sedan	2075	150	2225	3685
Town Sedan	2115	152	2267	3710
Sedan, 4d	2145	154	2299	3765
Club Sed., DeL.	2165	154	2319	3705
Twn. Sed., DeL.	2205	156	2361	3755
Hol. Coupe	2225	158	2383	
Sed., 4d, DeL.	2235	158	2393	3775
Hol. Cpe., DeL.	2470	171	2641	
Conv. Cpe., DeL.	2595	177	2772	
PACKARD				
Eight				
Club Sed., 2d	2094	130	2224	3740
Tour. Sed., 4d	2118	131	2249	3815
Sta. Sedan	3255	194	3449	4075
DeLuxe 8				
Club Sed., 2d	2221	137	2358	3770
Tour. Sed., 4d	2245	138	2383	3840
Super 8				
Club Sed., 2d	2449	159	2608	3800
Tour. Sed., 4d	2473	160	2633	3870
DeL. Cb. Sed.	2721	173	2894	3855
DeL. Tr. Sed.	2745	174	2919	3925
PACKARD (Continued)				
Conv. Vict. Cpe.	3154	196	3350	4110
DeL. Sedan, 7p	3724	226	3950	4600
DeL. Limous.	3867	233	4100	4620
Custom 8				
Tour. Sed., 4d	*3522	218	*3750	4200
Convert. Vict.	*4051	244	*4295	4435
PLYMOUTH‡				
DeLuxe P-19				
Coupe, 3p	1295	76	1371	2872
Sedan, 2d	1410	82	1492	2946
Suburban	1740	100	1840	3116
DeLuxe P-20				
Club Coupe	1435	84	1519	3040
Sedan, 4d	1465	86	1551	3068
Spec. DeL. P20				
Club Coupe	1515	88	1603	3041
Sedan, 4d	1540	89	1629	3072
Conv. Cb. Cpe.	1875	107	1982	3295
Sta. Wagon	2245	127	2372	3353
PONTIAC				
Chieft. 8				
Bus. Coupe	1527	113	1640	3289
Sed. Coupe	1644	119	1763	3334
Sedan, 2d	1644	119	1763	3344
Sedan, 4d.	1692	121	1813	3384
DeL. Sed. Cpe.	1734	124	1858	3344
DeL. Sed., 2d.	1734	124	1858	3354
DeL. Sed., 4d.	1782	126	1908	3389
Catalina, DeL.	1935	134	2069	3439
Cat. Sup. DeL.	1990	137	2127	3439
DeL. Conv. Cpe.	2050	140	2190	3584
Streaml. 8				
Sed. Cpe.	1624	118	1742	3354
Sedan, 4d.	1672	120	1792	3389
DeL. Sed. Cpe.	1714	123	1837	3359
DeL. Sed., 4d.	1762	125	1887	3399
Met. Sta. Wag.	2185	147	2332	3689
DeL. Met. St. Wg.	2260	151	2411	3629
Chieft. 6				
Bus. Cpe.	1462	109	1571	3209
Sed. Cpe.	1579	115	1694	3249
Sedan, 2d.	1579	115	1694	3274
Sedan, 4d.	1627	118	1745	3299
DeL. Sed. Cpe.	1669	120	1789	3254
DeL. Sed., 2d.	1669	120	1789	3279
DeL. Sed., 4d	1717	123	1840	3304
Catalina DeL.	1870	130	2000	3359
Cat. Sup. DeL.	1925	133	2058	3359
DeL. Conv. Cpe.	1985	137	2122	3514
Streaml. 6				
Sed. Cpe.	1559	114	1673	3269
Sedan, 4d.	1607	117	1724	3304
DeL. Sed. Cpe.	1649	119	1768	3289
DeL. Sed., 4d	1697	122	1819	3309
Met. Sta. Wag.	2120	144	2264	3604
DeL. Met. St. Wg.	2195	148	2343	3530
STUDEBAKER				
Champ. DeL.				
Coupe, 3p	1395	102	1497	2635
Sedan, 2d	1460	105	1565	2720
Coupe, 5p	1485	107	1592	2705
Sedan, 4d	1490	107	1597	2750
Ch. Reg. DeL.				
Coupe, 3p	1470	106	1576	2640
Sedan, 2d	1535	110	1645	2725
Coupe, 5p	1560	111	1671	2715
Sedan, 4d	1565	111	1676	2755
Convertible	1855	126	1981	2900
Commdr. DeL.				
Sedan, 2d	1745	126	1871	3215
Coupe, 5p	1770	127	1897	3215
Sedan, 4d	1775	127	1902	3255
Com. Reg. DeL.				
Sedan, 2d	1860	132	1992	3220
Coupe, 5p	1885	133	2018	3220
Sedan, 4d	1890	134	2024	3265
Land Cruiser	2045	142	2187	3355
Convertible	2180	149	2329	3375
WILLYS				
Jeepster	1495	107	1602	2468
Sta. Wag., 4 cyl.	1595	186	1781	2587
Sta. Wag., 6 cyl.	1695	119	1814	2845
Sta. Wag., 6 cyl.	1745	121	1866	

* Excluding Ultramatic transmission which is priced at $225.

‡ Prices do not include delivery and handling charges.

1950 PASSENGER CAR SPECIFICATIONS

CHASSIS AND ENGINE SPECIFICATIONS

The specifications shown on this and the following pages pertaining to 1950 passenger cars are only for the standard equipment included in Factory Delivered Price. Optional equipment shown in a few instances is at extra cost.

Line Number	Passenger Car Make and Model	Wheelbase (In.)	Tread (In.) Front	Tread (In.) Rear	Overall Dimensions (In.) Length—Including Bumpers and Bumper Guards	Overall Dimensions (In.) Width	Overall Dimensions (In.) Height—Road to Roof, No Load	Shipping Weight (Lb.) Cheapest 5 Pass. 4 Door Sedan or Equivalent	Tire Size (In.)	ENGINE Valve Arrangement	Number of Cylinders, Bore and Stroke (In.)	Total Piston Displacement (Cu. In.)	Taxable Horsepower	Max. Brake Hp. at Specified R.P.M. With Bare Engine	Max. Brake Hp. at Specified R.P.M. With Standard Accessories	Max. Torque (Lb. Ft.) at Specified R.P.M. With Bare Engine	Max. Torque (Lb. Ft.) at Specified R.P.M. With Standard Accessories	Standard Compression Ratio (to 1)	Compression Pressure: Pressure (Lb.)	Compression Pressure: At What R.P.M.	Weight per Cu. In.* 5 Pass. 4 Door Sedan	Weight per Hp.* (Without Accessories) 5 Pass. 4 Door Sedan	Hp. (With Accessories) per Cu. In.	Performance Factor** (Cu. In. per ton-foot)	Crankshaft Revolutions per Mile††	Line Number
1	Buick 8, 40	121½	59⅛	62 7/32	204	79 11/16	63 11/16	3715	7.60/15	I	8-3 3/32x4⅛	248.1	30.6	115-3600	110-3600	212-2000	209-2000	6.60	114	CS	16.99	36.65	.464	33.71	2956	1
2	8, 50	121½	59⅛	62 7/32	204	80	63 11/16	3745	7.60/15	I	8-3 3/16x4⅛	263.3	32.5	124-3600	119-3600	220-2000	217-2000	6.90	118	CS	16.12	34.23	.471	33.07	2812	2
3	8, 70	126¼	59⅛	62 7/32	208 11/16	80	64 11/16	4135	8.00/15	I	8-3 7/16x4 5/16	320.2	37.8	152-3600	134-3400	280-2000	274-2000	7.20	120	CS	14.46	30.49	.475			3
4	Cadillac V8, 61	122	59	63	211⅛	80⅛	62	3870	8.00/15	I	8-3 13/16x3⅝	331.0	46.5	160-3600	141-3400	312-1800	297-1800	7.50	120-140	CS	13.20	27.31	.483	39.13	2669	4
5	V8, 62	126	59	63	215⅞	80⅛	62 13/16	4010	8.00/15	I	8-3 13/16x3⅝	331.0	46.5	160-3600	141-3400	312-1800	297-1800	7.50	120-140	CS	13.63	28.19	.483			5
6	V8, 60	130	59	63	224⅞	80⅛	62 13/16		8.00/15	I	8-3 13/16x3⅝	331.0	46.5	160-3600	141-3400	312-1800	297-1800	7.50	120-140	CS			.483			6
7	V8, 75	146¾	59	63	236⅝	80⅛	64 1/16		8.20/15	I	8-3 13/16x3⅝	331.0	46.5	160-3600	141-3400	312-1800	297-1800	7.50	120-140	CS			.483		2955	7
8	Chevrolet 6, HJ-HK	115	57	58¾	197½	73 11/16	65¾	3120	6.70/15	I	6-3½x3¾	216.5	29.4	92-3400	85-3300	176- (a)	170- (a)	6.60	110	215	16.72	39.35	.425	35.32	3050	8
9	Chrysler 6, C48	125½	56	59 1/16	207⅝	68⅝		3655	7.60/15	L	6-3 7/16x4½	250.6	28.4	116-3600		208-1600		7.00	120-150	150	16.56	35.82	.463	32.09	2812	9
10	8, C49	131½	56¾†	59 7/32†	213⅝■			4170	8.20/15	L	8-3¼x4⅞	323.5	33.8	135-3200		270-1600		7.25	120-150	150	14.44	34.59	.417			10
11	8, C50	145½	57½	60	230¼				8.90/15	L	8-3¼x4⅞	323.5	33.8	135-3200		270-1600		7.25	120-150	150			.417			11
12	Crosley 4, CD	80	40	40	148¼	50	57	1363□	4.50/12	I	4-2½x2¼	44.0	10.0		26.5-5400		32.5-3000	8.00	130	260	42.34	70.30‡	.602‡	21.61	5067	12
13	De Soto 6, S-14	125½	56	59 1/16	207	74⅛		3525	7.60/15	L	6-3 7/16x4¼	236.6	26.4	112-3600		195-1200		7.00	120-150	150	17.01	35.94	.473	32.03	2812	13
14	Dodge 6, D-33	115	56	59	196¼	73		3200□	6.70/15	L	6-3¼x4⅝	230.2	25.4	103-3600		190-1200		7.00	120-150	150	16.07	35.92	.447	34.86	2894	14
15	6, D-34	123½	56	59	202⅞	74⅝		3410	7.10/15	L	6-3¼x4⅝	230.2	25.4	103-3600		190-1200		7.00	120-150	150	16.99	37.96	.447	32.51	2851	15
16	Ford 6, OHA	114	56	56	196 11/16	72 11/16	64 11/16	2990	6.00/16	L	6-3.3x4.4	225.9	26.1	95-3300		180-1200		6.80	110	CS	15.45	36.74	.421	34.33	2738	16
17	V8, OBA	114	56	56	196 11/16	72 11/16	64 11/16	3030	6.00/16	L	8-3 3/16x3¾	239.4	32.5	100-3600		181-2000		6.80	90-110	CS	14.75	35.30	.418	35.97	2738	17
18	Frazer 6, 1951	123½	58	60	207 5/16			3455	7.10/15	L	6-3 5/16x4⅜	226.2	26.3	115-3650		190-1800		7.30	120	70	17.46	34.39	.509	33.11	2990	18
19	Hudson 6, 500	119⅞	58½	55½	201½	77 1/16	60⅝	3510	7.10/15	L	6-3 9/16x3⅞	232.0	30.4	112-4000				6.70			17.28	35.80	.483	33.56	2997	19
20	6, 501, 502	123⅞	58½	55½	208 1/32	77 1/16	60⅝	3590	7.10/15	L	6-3 9/16x4⅜	262.0	30.4	123-4000		200-1600		6.70			15.61	33.26	.469	37.50	2997	20
21	8, 503, 504	123⅞	58½	55½	208 1/32	77 1/16	60⅝	3605	7.10/15	L	8-3x4½	254.0	28.8	128-4200		198-1600		6.70	119	125	16.16	32.07	.504	36.26	2997	21
22	Kaiser 6, 401-402	123½	58	60	206 1/16			3345	7.10/15	L	6-3 5/16x4⅜	226.2	26.3	100-3600▼		180-1400		7.30	120	70	17.00	38.46	.442	34.06	2990	22
23	Lincoln V8, OEL	121	58½	60	213 13/16	76 11/16	65 1/16	4009	8.00/15	L	8-3½x4⅜	336.7	39.2	152-3600		265-2000		7.00	110	CS	13.30	29.66	.451	39.99	2768	23
24	V8, OEH	125	58½	60	221 1/16	79	64 1/16	4259	8.20/15	L	8-3½x4⅜	336.7	39.2	152-3600		265-2000		7.00	110	CS	14.13	31.31	.451	37.18	2706	24
25	Mercury V8, OCM	118	58½	60	206 13/16	76 11/16	60 11/16	3386	7.10/15	L	8-3 3/16x4	255.4	32.5	110-3600		200-2000		6.80	115	CS	15.22	35.33	.431	36.36	2858	25
26	Nash 6, 5040	112	54 11/16	59 11/16	201	77½	63	2965	6.40/15	L	6-3⅛x4	184.0	23.4	85-3800		140-1600		7.00	120	CS	18.83	40.76	.462	34.29	3333	26
27	6, 5060	121	54 11/16	60½	210	77½	63.5	3350	7.10/15	I	6-3⅜x4⅜	234.8	27.3	115-3400		210-1600		7.30	130	CS	16.40	33.48	.490	35.40	2997	27
28	Oldsmobile 6, 76	119½	57	59	202	75 1/16	62 1/16	3320	7.10/15	L	6-3 17/32x4⅜	257.1	29.9	105-3400	99-3400	202-1400	197-1400	6.50	125	CS	14.86	36.38	.408	39.07	2997	28
29	V8, 88	119½	57	59	202	75 1/16	64 1/16	3515	7.60/15	I	8-3¾x3 7/16	303.7	45.0	135-3600	129-3600	263-1800	255-1800	7.25	136	150	13.22	29.74	.445	38.46	2624	29
30	V8, 98	122	59	61½	209	80	62 1/16	3765	7.60/15	I	8-3¾x3 7/16	303.7	45.0	135-3600	129-3600	263-1800	255-1800	7.25	136	150	14.04	31.59	.445	36.20	2624	30
31	Packard 8-2301	120	59 11/16	60 11/16	204 11/16	77 11/16	64 1/16	3815	7.60/15	L	8-3½x3¾	288.0	39.2	135-3600		230-2000		7.00			14.98	31.98	.469	36.36	2812	31
32	Super 8-2302 2332	127	59 11/16●	60 11/16	211 11/16	77 11/16	64 1/16	3870	7.60/15°	L	8-3½x4¼	327.0	39.2	150-3600		270-2000		7.00			13.36	29.13	.459	40.77	2812	32
33	Custom 8-2306-2333	127	60 1/16	60 11/16	213¼	77 11/16	64 1/16	4200	8.20/15	L	8-3½x4⅝	356.0	39.2	160-3600		282-2000		7.00			13.20	29.38	.449			33
34	Plymouth 6, P19	111	55 1/16	58 1/16	186½	72⅞		2946□	6.40/15	L	6-3¼x4⅜	217.8	25.4	97-3600		175-1200		7.00	120-150	150	16.82	35.53	.445	34.77	2939	34
35	6, P20	118½	55 1/16	58 1/16	192⅝	73⅝		3062	6.70/15	L	6-3¼x4⅜	217.8	25.4	97-3600		175-1200		7.00	120-150	150	16.35	36.72	.445	34.27	2894	35
36	Pontiac 6, 1950-25	120	58	59	202½	75 11/16	63¼▲	3299	7.10/15	L	6-3 9/16x4	239.2	30.4	90-3400		178-1200		6.50	160	1000	15.88	42.21	.376	36.55	2997	36
37	8, 1950-27	120	58	59	202½	75 11/16	63¼▲	3384	7.10/15	L	8-3⅜x3¾	268.2	36.4	108-3600		208-1800		6.50	156	1000	14.48	35.96	.403	38.12	2851	37
38	Studebaker 6, 9G	113	56 7/16	54	197¼	69⅞	61½	2750	6.40/15	L	6-3x4	169.6	21.6	85-4000		138-2400		7.00	120	150	19.16	38.24	.501	31.56	3120	38
39	6, 17A	120-124	55.5	54	207⅞♦	69 1/16	62¼	3255	7.60/15	L	6-3 5/16x4⅜	245.6	26.3	102-3200		205-1200		7.00	120	150	15.29	36.81	.416	37.37	2949	39
40	Willys-Overland 4, 4-63	104	55¼	57	175¾	68 11/16	72 11/16	2587	6.70/15	L	4-3⅛x4⅜	134.2	15.6	63-4000		105-2000		6.48	115	160	23.00	49.00	.469	33.60	3992	40
41	6, 6-63	104	55¼	57	175¾	68 11/16	72 11/16	2845	6.70/15	L	6-3x3½	148.4	21.6	72-4000	65-4000	117-1600	115-1600	6.42	120	160	22.54	46.46	.485	34.29	3992	41

ABBREVIATIONS

†—C-49 Town & Country, front 57½ in., rear 63 in.
■—C-49 Town & Country 222½ in.
□—Two door sedan.
‡—Based on hp with accessories.
♦—Land Cruiser 211⅞ in.
▼—Model 492—112 —3600.
●—Model 2332 60— in.
°—Model 2332 8.20/15.
▲—With load.
(a)—1000 to 2000 rpm.
CS—Cranking speed.
I—In-head.
L—L-head (valves at side)
*—All weight calculations are based on shipping weight plus an allowance of 500 lb for passengers, water, gasoline, and oil.
**—An explanation of the formula used for this calculation will be found on page 132.
††—Calculated on the basis of tire revolutions per mile times the standard rear axle ratio.

For Directory of the Manufacturers listed above, see page 63.

1950 PASSENGER CARS

PISTONS, RINGS AND CONNECTING RODS

Line Number	Passenger Car Make and Model	Number of Cylinders Bore and Stroke (In.)	Pistons: Make	Pistons: Material	Pistons: Features	Pistons: Weight (Oz.) Without Rings, Pin and Bushing	Pistons: Length (In.)	Pistons: Average Clearance (In.) Top Land	Pistons: Average Clearance (In.) Bottom of Skirt	Pistons: Average Ring Groove Depth (In.) Oil	Pistons: Average Ring Groove Depth (In.) Compression	Piston Rings, Oil: Number Used	Piston Rings, Oil: Width (In.)	Piston Rings, Oil: Average Gap (In.)	Piston Rings, Oil: Maximum Wall Thickness (In.)	Piston Rings, Compression: Number Used	Piston Rings, Compression: Width (In.)	Piston Rings, Compression: Average Gap (In.)	Piston Rings, Compression: Maximum Wall Thickness (In.)	Expanders Used—	Wrist Pin: Length (In.)	Wrist Pin: Diameter	Wrist Pin: Locked In—	Wrist Pin: Average Clearance, in Piston (In.)	Connecting Rods: Length (In.), Center to Center	Connecting Rods: Materials (S.A.E. No.)	Connecting Rods: Weight (Oz.)	Line Number
1	Buick 8, 40	8-3 3/32x4 1/8	Var	Ala	Ao,Trs,Tt,C	13.78	4.330	.0265	.0015	.166	.166	2	(a)	(b)	(c)	2	.0938	.015	.160	N	2.688	.8127	R	.00035	7 5/8	1145	29.20	1
2	8, 50	8-3 3/16x4 1/8	Var	Ala	Ao,Trs,Tt,C	12.91	3.750	.0265	.0015	.162	.162	2	(a)	(d)	(e)	2	.0938	.015	.160	N	2.688	.8127	R	.00035	7 5/8	1145	28.1	2
3	8, 70	8-3 7/16x4 5/16	Var	Ala	Ao,Trs,Tt,C	17.94	4.500	.0265	.0017	.182	.182	2	(a)	(f)	(g)	2	.0938	.015	(h)	N	3.062	.8747	R	.00035	8 1/4	1145	38.27	3
4	Cadillac V8, 61, 62, 60, 75	8-3 13/16x3 5/8	A-B	Ala	Ts,Sf	19.30	3.938	.0330	......	.187	.187	1	.1880	.015	.165	2	.0780	.015	.164	N	3.094	1.0000	R	.02500	6 5/8	1041	24.53	4
5	Chevrolet 6, HJ-HK	6-3 1/2x3 3/4	Own	Cas	Fh,O,Ss	28.00	3.750	.0105	.0022	.176	.157	1	.1865	.010	.155	2	.1237	.010	.155	N	3.150	.8047	R	......	6 13/16	DFS	31.20	5
6	Chrysler 6, C-48	6-3 7/16x4 1/2	Own	Ala	Us,C,Tp	18.50	3.875	.0305	.0007	.178	.176	2	.1562	.011	.150	2	.0938	.011	.169	N	2.875	.8594	F	.00025	7 5/8	MFS	32.40	6
7	8, C-49, C-50	8-3 1/4x4 7/8	Own	Ala	Us,C,Tp	16.50	3.875	.0305	.0007	.172	.169	2	.1562	.011	.145	2	.0938	.011	.162	N	2.750	.8594	F	.00025	9	MFS	32.03	7
8	Crosley 4, CD	4-2 1/2x2 1/4	Own	Ala	Ao,C	6.50	1.906	.0170	.0030	.152	.131	2	.1547	.011	.117	2	.0622	.012	.120	N	2.260	.6251	F	.00038	4 5/8	3140	9.62	8
9	De Soto 6, S-14	6-3 7/16x4 1/2	......	Ala	Us,C,Tp	18.50	3.875	.0305	.0007	.178	.176	2	.1562	.011	.150	2	.0938	.011	.169	N	2.875	.8594	F	.00025	8	MFS	34.10	9
10	Dodge 6, D-33, D-34	6-3 1/4x4 5/8	Own	Ala	Us,C,Tp	16.00	3.688	.0305	.0007	.172	.169	2	.1562	.011	.150	2	.0938	.011	.162	N	2.750	.8594	F	.00025	7 13/16	MFS	27.90	10
11	Ford 6, OHA	6-3.3x4.4	......	Ala	Dw,Fh	16.23	4.000	.0290	.0020	.178	.173	2	.1860	.014	.145	2	.0932	.013	.145	N	2.912	.8502	F	.00020	8 1/4	FS	28.75	11
12	V8, OBA	8-3 3/16x3 3/4	......	Ala	Au,C,Sh	13.12	2.980	.0230	.0008	.181	.170	2	.1860	.017	.147	2	.0932	.012	.147	N	2.847	.7503	F	.00020	7	Hcm	18.70	12
13	Frazer 6, 1951	6-3 5/16x4 3/8	Bohn	Ala	Sp,O,Tp	15.58	3.562	.0235	.0008	.179	.178	2	.1547	.012	.147	2	.0930	.012	.161	N	2.812	.8594	F	.00020	7	C1035	29.60	13
14	Hudson 6, 500	6-3 9/16x3 7/8	Own	Ala	C	18.12	3.750	.0188	.0007	.195	.195	2	(i)	.010	.158	2	.0780	.010	.178	N	2.938	.9680	F	.00015	8 1/2	C1041	34.24	14
15	6, 501, 502	6-3 9/16x4 3/8	Own	Ala	C	18.00	3.750	.0185	.0007	.195	.195	2	(i)	.010	.158	2	.0780	.010	.178	N	2.938	.9680	F	.00015	8 1/2	C1041	34.24	15
16	8, 503, 504	8-3x4 1/2	Own	Ala	C	10.75	3.188	.0160	.0007	.148	.148	2	(i)	.006	.135	2	.0930	.006	.128	N	2.438	.7500	F	.00015	8 1/16	C1041	31.38	16
17	Kaiser 6, 491, 492	6-3 5/16x4 3/8	Bohn	Ala	Sp,O,Tp	15.58	3.562	.0235	.0008	.179	.178	2	.1547	.012	.147	2	.0930	.012	.161	N	2.812	.8594	F	.00020	7	C1035	29.60	17
18	Lincoln V8, OEL, OEH	8-3 1/2x4 3/8	Bohn	Ala	St,Sp,O,Tp	19.30	3.840	.0245	.0005	......	......	1	.1860	.013	.135	2	.0934	.012	.165	Y	3.118	.8503	F	.00030	8 1/16	MFS	27.20	18
19	Mercury V8, OCM	8-3 3/16x4	Bohn	Ala	St	12.98	2.890	.0240	.0007	......	......	2	.1860	.013	.142	2	.0934	.013	.154	N	2.842	.7503	F	.00020	7	Hcm	18.16	19
20	Nash 6, 5040	6-3 1/8x4	Bohn	Ala	St,Tp,C,So	13.50	3.375	......	......	.173	.169	2	.1550	.015	.144	2	.0930	.015	.151	N	2.750	.8594	R	.00030	6 5/8	FS	25.00	20
21	6, 5060	6-3 3/8x4 3/8	Bohn	Ala	St,Tp,C,Sp	12.50	3.875	.0216	......	.177	.169	2	.1550	.015	.140	2	.0930	.015	.164	N	2.824	.8748	F	......	8 3/4	DFS	38.25	21
22	Oldsmobile 6, 76	6-3 17/32x4 3/8	Own	Ala	T,C,Ox	18.85	4.031	.0255	.0007	.175	.183	2	.1880	.011	.155	2	.0938	.013	.172	N	3.156	.8555	P	.00005	7 13/16	X-1335	30.72	22
23	V8, 88, 98	8-3 3/4x3 7/16	Own	Ala	Au,C,Tp,St	19.88	4.000	.0290	.0007	.193	.200	1	.1880	.012	.150	2	.0781	.015	.187	Y	3.016	.9805	F	.00010	6 5/8	X-1335	29.84	23
24	Packard 8-2301	8-3 1/2x3 3/4	......	Ala	Au	19.50	3.875	......	.0007	......	......	1	.1860	.013	......	2	.0932	.014	......	......	3.016	.8750	F	......	7 13/16	FS	35.00	24
25	Super 8-2302-2332	8-3 1/2x4 1/4	......	Ala	Au	19.50	3.875	......	.0007	......	......	1	.1860	.013	......	2	.0932	.014	......	......	3.016	.8750	F	......	7 13/16	FS	35.40	25
26	Custom 8-2306-2333	8-3 1/2x4 5/8	......	Ala	Au	19.50	3.875	......	.0007	......	......	1	.1860	.013	......	2	.0932	.014	......	......	3.016	.8750	F	......	9 3/4	FS	38.80	26
27	Plymouth 6, P-19, P-20	6-3 1/4x4 3/8	Own	Ala	Us,C,Tp	16.00	3.688	.0305	.0007	.172	.169	2	.1562	.011	.150	2	.0938	.011	.162	N	2.750	.8594	F	.00025	7 13/16	MFS	31.06	27
28	Pontiac 6, 1950-25	6-3 9/16x4	Own	Cna	Tp	27.04	3.578	.0215	......	.194	.192	1	.1880	.009	.158	2	.0938	.009	.175	N	3.062	.9844	P	......	7 5/16	1035	31.00	28
29	8, 1950-27	8-3 3/8x3 3/4	Own	Cna	Tp	26.80	3.594	.0210	......	.192	.172	1	.1880	.010	.153	2	.0938	.010	.153	N	2.875	.9844	P	......	7 5/16	1035	31.00	29
30	Studebaker 6, 9G	6-3x4	Alcoa	Ala	T	9.14	2.906	.0172	......	.168	(j)	1	.1560	.012	.139	2	(k)	.012	.150	N	2.625	.7500	R	.00020	6 5/8	DFS	19.04	30
31	6, 17A	6-3 5/16x4 3/8	Alcoa	Ala	T	14.90	3.750	.0175	......	.186	.171	1	.1800	.011	.150	2	.0938	.011	.185	N	2.875	.8750	R	.00020	7 13/16	DFS	30.70	31
32	Willys-Overland 4, 4-63	4-3 1/8x4 3/8	AAB	Ala	Tp,O	12.70	3.750	.0180	.0030	.170	.160	1	.1800	.010	.140	2	.0930	.010	.135	N	2.781	.8118	R	......	9 1/16	1141	40.00	32
33	6, 6-63	6-3x3 1/2	AL	Ala	Sp,O,Tp	9.67	3.000	.0172	.0015	.173	.164	1	.1880	.012	.140	2	.0938	.013	.140	N	2.531	.7497	R	......	6 15/16	1141	22.00	33

ABBREVIATIONS

(a)—Upper .1875, lower .1865.
(b)—Upper .0150, lower .0015 (segmented).
(c)—Upper .1400, lower .1550.
(d)—Upper .0150, lower .0016 (segmented).
(e)—Upper .1470, lower .1550.
(f)—Upper .0150, lower .0017 (segmented).
(g)—Upper .1500, lower .1700.
(h)—Upper .1700, lower .1500.
(i)—Upper .1875, lower .1560.
(j)—Upper .1630, lower .1480.
(k)—Upper .0940, lower .1250.
AAB—Aluminum Co. of America, Aluminum Ind., or Bohn.
AB—Aluminum Co. of America or Bohn.
AL—Aluminum Industries, Inc.
Ala—Aluminum alloy.
Alcoa—Aluminum Co. of America.
Ao—Aluminum oxide finish.
Au—Autothermic.
Bohn—Bohn Aluminum & Brass Corp.
C—Cam ground.
Cas—Cast alloy iron, surface treated.
Cna—Chrome nickel alloy.
DFS—Drop forged steel.
Dw—Double wing.
F—Floating.
Fh—Flat head.
FS—Forged steel.
Hcm—High carbon manganese steel.
MFS—Manganese forging steel.
N—No or none.
O—Oval.
Ox—Oxalic sulphuric acid.
P—Locked in piston.
R—Locked in rod.
Sf—Stanate finish.
Sh—Spherical head.
So—Solid skirt.
Sp—Split skirt.
Ss—Slipper skirt.
St—Steel strut.
T—T-slot.
Tp—Tin plated.
Trs—Transverse slot.
Ts—TT-slot.
Tt—Turbulator top.
Us—U-slot.
Var—Various.
Y—Yes.

For Directory of the Manufacturers listed above, see page 63.

1950 PASSENGER CARS

CONNECTING RODS AND CRANKSHAFT BEARINGS

Line Number	Passenger Car Make and Model	Connecting Rod Bearings: Crankpin Journal: Diameter and Length (In.)	Lower Bearing: Material	Lower Bearing: Average Clearance (In.)	Lower Bearing: Average End Play (In.)	Lower Bearing: Type of Shim	Lower Bearing: Type of Bearing	Lower Bearing: Rods and Pins Removed From	Crankshaft: Vibration Damper	Crankshaft: Counterweights	Crankshaft: End Thrust taken by	Crankshaft: Amount of End Play (In.)	Main Bearings: Type	Main Bearings: Removable from Below	Main Bearings: Material	Main Bearings: Clearance (In.)	Main Bearings: Type of Shim	Journal Diameter and Length: No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	No. 9	Line Number
1	Buick 8, 40	2.000x1.212	Dur	.0011	.007	N	Sep	A	Y	8	C	.006	Si	Y	Dsb	.0010	N	2.312x1.266	2.375x.938	2.438x1.628	2.500x.938	2.562x1.781	......	......	......	......	1
2	.... 8, 50	2.125x1.030	Dur	.0011	.007	N	Sep	A	Y	8	C	.006	Si	Y	Dsb	.0010	N	2.562x1.266	2.562x1.031	2.562x1.547	2.562x1.031	2.562x1.781	......	......	......	......	2
3	.... 8, 70	2.250x1.306	Dur	.0011	.007	N	Sep	A	Y	8	C	.006	Si	Y	Dsb	.0010	N	2.562x1.266	2.625x.960	2.688x1.469	2.750x.969	2.812x2.469	......	......	......	......	3
4	Cadillac V8, 61, 62, 60, 75	2.250x2.000	Dur	.0027	.011‡	N	Sep	A	Y	6	R	.003	Si	Y	Dur	.0020	N	2.500x1.000	2.500x1.062	2.500x1.062	2.500x1.062	2.500x1.875	......	......	......	......	4
5	Chevrolet .... 6, HJ-HK	2.311x1.437	Bab	.0008	.008	L	Spun	A	Y	7	3	.006	Si	Y	Bab	.0017	So	2.684x1.453	2.714x1.438	2.746x1.436	2.777x2.094	......	......	......	......	......	5
6	Chrysler 6, C-48	2.125x1.219	Bab	.0010	.008	N	Sep	A	Y	8	R	.005	Si	Y	Bab	.0010	N	2.500x1.234	2.500x1.234	2.500x1.234	2.500x1.875	......	......	......	......	......	6
7	.... 8, C-49, C-50	2.188x1.125	Bab	.0010	.008	N	Sep	A	Y	8	R	.005	Si	Y	Bab	.0010	N	2.703x1.656	2.703x1.125	2.703x1.312	2.703x1.125	2.703x2.094	......	......	......	......	7
8	Crosley .... 4, CD	1.375x.870	Bab	.0022	.017	N	Sep	B	N	8	R	.006	Si	Y	Bab	.0022	N	1.375x1.312†	1.375x.870†	1.375x.870†	1.375x.870†	1.800x1.499†	......	......	......	......	8
9	De Soto 6, S-14	2.125x1.219	Bab	.0010	.008	N	Sep	A	Y	7	R	.005	Si	Y	Bab	.0010	N	2.500x1.234	2.500x1.234	2.500x1.234	2.500x1.875	......	......	......	......	......	9
10	Dodge 6, D-33	2.062x1.000	Bab	.0010	.008	N	Sep	A	N	7	R	.005	Si	Y	Bab	.0010	N	2.500x1.234	2.500x1.031	2.500x1.031	2.500x1.875	......	......	......	......	......	10
11	.... 6, D-34	2.062x1.000	Bab	.0010	.008	N	Sep	A	Y	7	R	.005	Si	Y	Bab	.0010	N	2.500x1.234	2.500x1.031	2.500x1.031	2.500x1.875	......	......	......	......	......	11
12	Ford .... 6, OHA	2.298x1.400	CL	.0016	.005	N	Sep	A	Y	7	R	.006	Si	Y	Spec	.0013	N	2.874x1.145	2.874x1.148	2.874x1.145	2.874x1.274	......	......	......	......	......	12
13	.... V8, OBA	2.138x1.755	CL	.0012	.012‡	N	Sep	A	N	6	R	.004	Si	Y	Spec	.0013	N	2.499x1.500	2.499x1.500	2.499x2.250	......	......	......	......	......	......	13
14	Frazer 6, 1951	2.062x1.312	Bab	.0014	.008	N	Sep	A	Y	6	F	.005	Si	Y	Bab	.0017	N	2.375x1.562	2.375x1.312	2.375x1.312	2.375x1.547	......	......	......	......	......	14
15	Hudson 6, 500	2.125x1.625	Bab	.0010	.010	N	Sep	A	Y	7	3	.006	Si	Y	Bab	.0010	N	2.499x1.438	2.499x1.375	2.499x1.625	2.499x1.750	......	......	......	......	......	15
16	.... 6, 501, 502	2.125x1.625	Bab	.0010	.010	N	Sep	A	Y	7	3	.006	Si	Y	Bab	.0010	N	2.499x1.438	2.499x1.375	2.499x1.625	2.499x1.750	......	......	......	......	......	16
17	.... 8, 503, 504	1.938x1.375	(a)	.0004	.010	N	Spun	A	Y	8	C	.009	Si	Y	Bbt	.0010	N	2.281x1.625	2.312x1.375	2.343x1.875	2.375x1.375	2.406x2.000	......	......	......	......	17
18	Kaiser 6, 491, 492	2.062x1.312	Bab	.0014	.008	N	Sep	A	Y	6	F	.005	Si	Y	Bab	.0017	N	2.375x1.562	2.375x1.312	2.375x1.312	2.375x1.547	......	......	......	......	......	18
19	Lincoln .... V8, DEL, DEH	2.400x2.282	CL	.0014	.010‡	N	Sep	A	Y	6	R	.006	Si	Y	CL	.0016	N	2.874x1.380	2.874x1.480	2.874x2.400	......	......	......	......	......	......	19
20	Mercury .... V8, OCM	2.138x1.755	CL	.0017	.006	N	Sep	A	N	6	R	.004	Si	Y	Spec	.0012	N	2.499x1.500	2.499x1.500	2.499x1.850	......	......	......	......	......	......	20
21	Nash 6, 5040	2.094x1.125	Bab	.0014	.010	N	Sep	A	Y	5	F	.005	Si	Y	Bab	.0018	N	2.484x1.312	2.484x1.375	2.484x1.375	2.484x1.375	......	......	......	......	......	21
22	.... 6, 5060	2.000x1.438	Bab	.0015	.011	N	Sep	A	Y	7	C	.006	Si	Y	Bab	.0014	N	2.484x1.500	2.484x1.125	2.484x1.125	2.484x1.875	2.484x1.125	2.484x1.125	2.484x1.875	......	......	22
23	Oldsmobile 6, 76	2.363x1.128	Dur	.0010	.008	N	Sep	A	Y	7	F	.006	Si	Y	Dur	.0018	N	2.478x1.472	2.541x1.250	2.608x1.250	2.688x1.500	......	......	......	......	......	23
24	.... V8, 88, 98	2.250x2.000	Dur	.0019	.006	N	Sep	A	N	6	R	.006	Si	Y	Dur	.0018	N	2.500x1.094	2.500x1.125	2.500x1.125	2.500x1.125	2.625x1.500	......	......	......	......	24
25	Packard 8-2301	2.250x1.312	......	.0015	.007	......	Sep	......	Y	8	C	.006	......	......	Spec	.0020	......	2.746x1.219	2.746x1.062	2.746x1.594	2.746x1.062	2.746x2.062	......	......	......	......	25
26	.... Super 8-2302-2332	2.250x1.312	......	.0015	.007	......	Sep	......	Y	8	C	.006	......	......	Spec	.0020	......	2.746x1.219	2.746x1.062	2.746x1.594	2.746x1.062	2.746x2.062	......	......	......	......	26
27	.... Custom 8-2306-2333	2.250x1.375	......	.0018	.008	......	Sep	......	Y	8	C	.005	......	......	Spec	.0020	......	2.746x1.344	2.746x1.188	2.746x1.188	2.746x1.188	2.746x1.688	2.746x1.188	2.746x1.188	2.746x1.188	2.746x2.094	27
28	Plymouth 6, P-19, P-20	2.062x1.000	Bab	.0010	.008	N	Sep	A	N	7	R	.005	Si	Y	Bab	.0010	N	2.500x1.234	2.500x1.031	2.500x1.031	2.500x1.875	......	......	......	......	......	28
29	Pontiac 6, 1950-25	2.125x1.281	SSb	.0011	.009	N	Sep	A	Y	9	R	.006	Si	Y	SSb	.0013	......	2.500x1.250	2.531x1.188	2.594x1.125	2.625x1.562	......	......	......	......	......	29
30	.... 8, 1950-27	2.000x1.062	SSb	.0011	.009	N	Sep	A	Y	8	R	.005	Si	Y	SSb	.0013	......	2.375x1.280	2.406x1.188	2.438x1.438	2.469x1.125	2.625x1.562	......	......	......	......	30
31	Studebaker 6, 9G	1.812x1.125	Bab	.0012	.007	N	Sep	A	Y	4	F	.004	Si	Y	Bab	.0015	N	2.438x1.312	2.438x1.125	2.438x1.125	2.438x1.531	......	......	......	......	......	31
32	.... 6, 17A	2.188x1.156	Bab	.0012	.007	N	Sep	A	Y	5	F	.004	Si	Y	Bab	.0016	N	2.875x1.094	2.875x1.062	2.875x1.062	2.875x1.781	......	......	......	......	......	32
33	Willys-Overland 4, 4-63	1.938x1.938	Bab	.0015	.007	N	Sep	A	N	4	F	.005	Si	Y	Bab	.0021	N	2.334x1.925	2.334x2.080	2.334x1.938	......	......	......	......	......	......	33
34	.... 6, 6-63	1.980x1.118	Bab	.0015	.007	N	Sep	A	Y	4	F	.004	Si	Y	Bab	.0020	N	2.250x1.304	2.250x1.280	2.250x1.280	2.250x1.604	......	......	......	......	......	34

ABBREVIATIONS

†—Bearing insert.
‡—Total of 2 rods.

(a)—SAE 13 or equivalent.
A—Above.
B—Below.
Bbt—Bronze back lined with tin base.

Bab—Babbitt—steel backed.
C—Center.
CL—Copper lead—steel backed.
Dsb—Durex—steel backed.

Dur—Durex.
F—Front.
L—Laminated.
N—No or none.

R—Rear.
Sep—Separate.
Si—Slip-in.
So—Solid.

Spec—Special.
SSb—Special alloy—steel backed.
Y—Yes.

For Directory of the Manufacturers listed above, see page 63.

1950 PASSENGER CARS

VALVES, INTAKE AND EXHAUST

INTAKE VALVE

Line Numbers	Passenger Car Make and Model		Make	Material	Overall Length (In.)	Head Diameter (In.)	Port Diameter (In.) Minimum	Seat: Angle (Deg.)	Seat: Inserts Used?	Stem Diameter (In.)	Lift (In.)	Springs Pressure (Lb.): Valve Closed	Springs Pressure (Lb.): Valve Open	Springs Length (In.): Valve Closed	Springs Length (In.): Valve Open	Springs Length (In.): Out of Engine
1	Buick	8, 40	T-R-E	3140	5.109	1.531	1.125	45	No	.372	.348	32†	77†	1.938†	1.594†	2.344†
2		8, 50	T-R-E	3140	5.109	1.531	1.125	45	No	.372	.348	52•	120•	1.938•	1.594•	2.380•
3		8, 70	T	3140	5.250	1.781	1.375	45	No	.372	.347	52•	120•	1.938•	1.594•	2.380•
4	Cadillac	V8, 61, 62, 60, 75	R	3140	4.549	1.750	1.625	44	No	.344	.327	60	135	1.686	1.366	1.968
5	Chevrolet	6, HJ-HK	Own	Ss	6.275	1.641	1.250	30	No	.341	.294	58	132	1.821	1.505	2.125
6	Chrysler	6, C-48		Ss	4.781	1.719	1.438	45	No	.341	.375	42½	111	1.750	1.375	2.000
7		8, C-49, C-50		Var	5.875	1.531	1.406	45	No	.340	.375	42½	111	1.750	1.375	2.000
8	Crosley	CD	Own	3140	3.934	1.688	1.050	45	No	.314	.235	30	51	1.500	1.219	2.000
9	De Soto	6, S-14		Ss	4.781	1.719	1.438	45	No	.341	.375	42½	111	1.750	1.375	2.000
10	Dodge	6, D-33, D-34		Var	4.781	1.531	1.250	45	No	.341	.359	42½	111	1.750	1.375	2.000
11	Ford	6, OHA	Own	Ss	5.360	1.647	1.511	45	No	.341	.350	50	116	2.130	1.750	2.500
12		V8, OBA	Own	Ss	4.819	1.515	1.340	45	No	.341	.293	41½	83	2.130	1.840	2.480
13	Frazer	6, 1951		NS	5.188	1.516	1.375	30	No	.341	.348	51	113	1.672	1.312	1.938
14	Hudson	6, 500	E	8645	5.730	1.831	1.687	45	No	.342	.346	77	159	2.188	1.842	2.500
15		6, 501, 502	E	8645	5.730	1.831	1.687	45	No	.342	.346	77	159	2.188	1.842	2.500
16		6, 503, 504	E	8645	5.094	1.500	1.380	45	No	.341	.343	40	80			2.343
17	Kaiser	6, 491, 492		NS	5.188	1.516	1.375	30	No	.341	.348	51	113	1.672	1.312	1.938
18	Lincoln	V8, OEL, OEH	R-E	8645	5.715	1.600	1.570	45	No	.342	.350	65	146	1.680	1.320	2.080
19	Mercury	V8, OCM	E-O	Ss	4.820	1.510	1.340	45	Yes	.342	.323	38½	82	2.130	1.810	2.410
20	Nash	6, 5040	Al-R		4.781	1.469	1.312	(c)	No	.341	.312	39	83	1.750	1.438	2.094
21		6, 5060	Al-R		5.484	1.750	1.593	(c)	No	.373	.344	55½	149	1.812	1.438	2.062
22	Oldsmobile	6, 76	Var	3140	5.789	1.750	1.375	30	No	.342	.310	55	100	2.250	1.938	2.625
23		V8, 88, 98	Var	3140	4.917	1.750	1.438	45	No	.342	.333	65	141	1.777	1.447	2.094
24	Packard	8-2301		CNS	5.875	1.672		30		.342	.342	63	140	1.750	1.406	
25		Super 8-2302-2332		CNS	5.875	1.672		30		.342	.342	63	140	1.750	1.406	
26		Custom 8-2306-2333		CNS	5.875	1.672		30		.342	.342	63	140	1.750	1.406	
27	Plymouth	6, P-19, P-20		Var	4.781	1.531	1.250	45	No	.341	.375	42½	111	1.750	1.375	2.000
28	Pontiac	6, 1950-25	Var	Var	5.719	1.594	1.375	30	No	.312	.297	59½	101	1.906	1.594	
29		8, 1950-27	Var	Var	5.531	1.469	1.250	30	No	.312	.297	62½	106	1.719	1.406	
30	Studebaker	6, 9G	R-E	CNS	4.344	1.344	1.188	45	No	.312	.344	51½	98	1.656	1.312	2.094
31		6, 17A	R-E	CNS	5.219	1.469	1.312	45	No	.344	.344	62	135	2.094	1.750	2.500
32	Willys-Overland	4, 4-63	A-E-T	3140	5.891	1.531	1.343	45	No	.373	.351	53	120	2.109	1.750	2.500
33		6, 6-63	Al-R	3140	4.500	1.375	1.124	45	No	.340	.284	50	105	1.625	1.328	1.891

EXHAUST VALVE

Line Numbers	Passenger Car Make and Model		Make	Material	Overall Length (In.)	Head Diameter (In.)	Port Diameter (In.) Minimum	Seat: Angle (Deg.)	Seat: Inserts Used?	Stem Diameter (In.)	Lift (In.)	Springs Pressure (Lb.): Valve Closed	Springs Pressure (Lb.): Valve Open	Springs Length (In.): Valve Closed	Springs Length (In.): Valve Open	Springs Length (In.): Out of Engine
1	Buick	8, 40	T-R-E	(a)	5.109	1.344	1.031	45	No	.372	.342	32†	77†	1.938†	1.594†	2.344†
2		8, 50	T-R-E	(a)	5.109	1.344	1.031	45	No	.372	.342	52•	120•	1.938•	1.594•	2.380•
3		8, 70	T-R-E	(a)	5.250	1.438	1.062	45	No	.372	.348	52•	120•	1.938•	1.594•	2.380•
4	Cadillac	V8, 61, 62, 60, 75	R	(d)	4.549	1.437	1.312	44	No	.344	.327	60	135	1.686	1.366	1.968
5	Chevrolet	6, HJ-HK	Own	Hcs	4.932	1.500	1.250	45	No	.340	.312	58	132	1.821	1.505	2.125
6	Chrysler	6, C-48		Ss	4.781	1.531	1.375	45	Yes	.340	.375	42½	111	1.750	1.375	2.000
7		8, C-49, C-50		Ss	5.875	1.344	1.219	45	Yes	.340	.375	42½	111	1.750	1.375	2.000
8	Crosley	CD	Own	2112	3.934	1.047	.925	45	No	.313	.235	42	71	1.312	1.078	
9	De Soto	6, S-14		Ss	4.781	1.531	1.438	45	Yes	.340	.375	42½	111	1.750	1.375	2.000
10	Dodge	6, D-33, D-34		Ss	4.781	1.406	1.281	45	Yes	.341	.359	42½	111	1.750	1.375	2.000
11	Ford	6, OHA	Own	CNS	5.428	1.520	1.340	45	Yes	.341	.350	50	116	2.130	1.750	2.500
12		V8, OBA	Own	CNS	4.816	1.515	1.340	45	Yes	.341	.289	41½	83	2.130	1.840	2.480
13	Frazer	6, 1951		Ss	5.188	1.328	1.188	45	No	.339	.332	51	113	1.672	1.312	1.938
14	Hudson	6, 500	E	(b)	5.730	1.556	1.375	45	No	.341	.346	77	159	2.188	1.842	2.500
15		6, 501, 502	E	(b)	5.730	1.556	1.375	45	No	.341	.346	77	159	2.188	1.842	2.500
16		6, 503, 504	E	Ss	5.094	1.375	1.223	45	No	.339	.343	40	80			2.343
17	Kaiser	6, 491, 492		Ss	5.188	1.328	1.188	45	No	.339	.332	51	113	1.672	1.312	1.938
18	Lincoln	V8, OEL, OEH	R-E	CNS	5.714	1.515	1.380	45	Yes	.341	.350	65	146	1.680	1.320	2.080
19	Mercury	V8, OCM	Own	CNS	4.815	1.510	1.340	45	Yes	.341	.323	38½	82	2.130	1.810	2.410
20	Nash	6, 5040	Al-R	2112	4.781	1.281	1.125	(c)	No	.341	.312	39	83	1.750	1.438	2.094
21		6, 5060	Al-R	2112	5.484	1.469	1.312	(c)	No	.372	.375	55½	149	1.812	1.438	2.062
22	Oldsmobile	6, 76	Var	2112	5.816	1.422	1.250	45	No	.341	.308	55	100	2.250	1.938	2.625
23		V8, 88, 98	Var	XCR	4.941	1.438	1.241	45	No	.393	.333	65	141	1.777	1.447	2.094
24	Packard	8-2301		Aus	5.875	1.438		45		.340	.342	63	140	1.750	1.406	
25		Super 8-2302-2332		Aus	5.875	1.438		45		.340	.342	63	140	1.750	1.406	
26		Custom 8-2306-2333		Aus	5.875	1.438		45		.340	.342	63	140	1.750	1.406	
27	Plymouth	6, P-19, P-20		Ss	4.781	1.406	1.281	45		.341	.375	42½	111	1.750	1.375	2.000
28	Pontiac	6, 1950-25	Var	Var	5.719	1.469	1.312	45	No	.312	.297	59½	101	1.906	1.594	
29		8, 1950-27	Var	Var	5.531	1.344	1.188	45	No	.312	.297	62½	106	1.719	1.406	
30	Studebaker	6, 9G	R-E	2112	4.344	1.281	1.125	45	No	.312	.344	51½	98	1.656	1.312	2.094
31		6, 17A	R-E	Ss	5.219	1.281	1.125	45	No	.344	.344	62	135	2.094	1.750	2.500
32	Willys-Overland	4, 4-63	A-E-T	3140	5.812	1.469	1.281	45	No	.372	.351	53	120	2.109	1.750	2.500
33		6, 6-63	Al-R	3140	4.500	1.281	1.120	45	No	.340	.300	50	105	1.625	1.328	1.891

ABBREVIATIONS

†—Outer valve spring only; inner spring 20 lb., 1.656 in. with valve closed; 51 lb., 1.312 in. with valve open; 1.906 in. out of engine.

•—Outer valve spring only; inner spring 24 lb., 1.660 in. with valve closed; 52 lb. 1.320 in. with valve open; 2.100 in. out of engine.

°—Outer spring only—inner is same as exhaust valve spring.

(a)—XCR or 2112N.
(b)—Upper 2112, lower NE8645.
(c)—45° in head, 44° in block.
(d)—Head N82120, stem 8729.
A-E-T—Aluminum Ind., Eaton, or Rich.
Al-R—Aluminum Industries, Inc., or Rich.

Aus—Austenitic steel.
CNS—Chrome nickel steel.
E—Eaton Mfg. Co.
E-O—Eaton or own.
Hcs—High chrome steel.
NS—Nickel steel.

R—Rich Mfg. Co.
R-E—Rich or Eaton.
Ss—Silichrome steel.
T—Thompson Products, Inc.
T-R-E—Thompson, Rich, or Eaton.
Var—Various.

For Directory of the Manufacturers listed above, see page 63.

1950 PASSENGER CARS

TIMING GEARS, VALVE TIMING AND LUBRICATION

Line Number	Passenger Car Make and Model	Crankshaft Gear or Sprocket: Make	Crankshaft Gear or Sprocket: Material	Camshaft Gear or Sprocket: Make	Camshaft Gear or Sprocket: Material	Timing Chain: Make	Timing Chain: Number of Links	Timing Chain: Width (In.)	Timing Chain: Pitch (In.)	Valve Tappet Clearance (Inches) Intake: Operating	Intake: Timing	Exhaust: Operating	Exhaust: Timing	Hydraulic Valve Lifters	Valve Timing (Degrees) Intake: Opens	Intake: Closes	Exhaust: Opens	Exhaust: Closes	Lubrication: Type	Oil Pressure to Main Bearings	Connecting Rods	Wristpins	Camshaft Bearings	Tappets	Timing Gear or Chain	Pump Type	Normal Oil Pressure Lbs. at M.P.H.	Lbs. Pressure which Opens Relief Valve	Crankcase Capacity Dry (Qts.) Less Filter	Oil Pressure Gage Make	Floating Type Oil Intake	External Oil Filter Make	Oil Cooler Make	Line Number
1	Buick 8, 40	LB	1112	LB	CI	LB	49	[illegible]	½	.015H	.015	.015H	.015	N	13BT	68AB	55BB	22AT	P	Y	Y	N	Y	N	Po	G	35-35	35	6½	AC	Yes	AC	No	1
2	8, 50	LB	1112	LB	CI	LB	49	[illegible]	½					Y	13BT	68AB	55BB	22AT	P	Y	Y	N	Y	N	Po	G	35-35	35	6½	AC	Yes	AC	No	2
3	8, 70	LB	1112	LB	CI	LB	50	[illegible]	½					Y	14BT	71AB	56BB	25AT	P	Y	Y	N	Y	N	Po	G	35-35	35	8	AC	Yes	AC	No	3
4	Cadillac V8, 61, 62, 60, 75	Own	1115	Own	1115	LB	46	[illegible]	½	A	.001	A	.001	Y	24BT	98AB	63BB	49AT	P	Y	Y	N	Y	Y	Sp	G	35-30	40	5	AC	Yes	No	No	4
5	Chevrolet 6, HJ, HK	Own	Ste	Var	BF	TG				.006H	.006H	.013H	.013H	N	1BT	39AB	42BB	9AT	PS	Y	Y	N	Y	N	Po	G	14-39	60	5½	AC	No	No	No	5
6	Chrysler 6, C-48		Ms		CI		48	1	½	.008H	.014	.010H	.014	N	12BT	44AB	50BB	6AT	P	Y	Y	N	Y	N	Po	R	45-45	45			Yes	Pur		6
7	8, C-49, C-50		Ms		CI		47	1¼	½	.008H	.011	.010H	.014	N	12BT	44AB	50BB	6AT	P	Y	Y	N	Y	N	Po	R	45-45	45			Yes	Pur		7
8	Crosley 4, CD	Own	1040	Own	1045	TG				.005C		.008C		N	5BT	50AB	50BB	5AT	P	Y	Y	N	Y	N	Po	G	35-30	35	2¾	SW	No	Fram	No	8
9	De Soto 6, S-14		Ms		CI		48	1	½	.008H	.014C	.010H	.014C	N	12BT	44AB	50BB	6AT	P	Y	Y	N	Y	N	Po	R	45-45	45			Yes	Pur		9
10	Dodge 6, D-33		Ms		CI		48	1	½	.008H	.014	.010H	.014	N	8BT	36AB	37BB	7AT	P	Y	Y	N	Y	N	Po	R	45-20	45			Yes	No		10
11	6, D-34		Ms		CI		48	1	½	.008H	.014	.010H	.014	N	8BT	36AB	37BB	7AT	P	Y	Y	N	Y	N	Po	R	45-20	45			Yes	Pur		11
12	Ford 6, OHA	Own	CI		Co	TG				.010C	.015	.014C	.015	N	11BT	41AB	48BB	10AT	P	Y	Y	N	Y	N	Po	R	45-35	60	5	Var	No	F-P	No	12
13	V8, OBA	Own	CI	Own	Co	TG				.014	.018†	.018	.020	N	5BT	44AB	48BB	3AT	P	Y	Y	N	Y	N	Po	G	40-35	42	5	Var	No	F-P	No	13
14	Frazer 6, 1951	LB	Ste		CI	LB	46	1	½	.014	.014	.014	.014	N	10BT	60AB	55BB	10AT	P	Y	Y	N	Y	Y‡	Po	G	35-30	35	5½	AL	Yes	Pur		14
15	Hudson 6, 500	Mor	Ste	Mor	CI	Mor	60	1¼	⅜	.008H		.010H		N	7°18'BT	53°42'AB	53°18'BB	7°42'AT	P	Y	Y	Y	N	Y	Po	R	40-30		7½		Yes	Mic	No	15
16	8, 501, 502	Mor	Ste	Mor	CI	Mor	60	1¼	⅜	.008H		.010H		N	7°18'BT	53°42'AB	53°18'BB	7°42'AT	P	Y	Y	N	Y	Y	Po	R	40-30		7½		Yes	Fram	No	16
17	8, 503, 504	Own	CI	Alcoa	CA	TG				.008H		.010H		N	10°40'BT	60AB	50BB	18°44'AT	(a)	N	N	N	N	N	Sp	O	3-	3	8		Yes	Fram	No	17
18	Kaiser 6, 491, 492		Ste	Own	CI	LB	48	1	½	.014	.014	.014	.014	N	10BT	60AB	55BB	10AT	P	Y	Y	N	Y	Y‡	Po	G	35-30	35	5½	AL	Yes	Pur		18
19	Lincoln V8, OEL, OEH	Own	CI	Own	CA	TG					.006		.006	Y	5BT	52AB	49BB	8AT	P	Y	Y	N	Y	Y	Po	G	50-40	50	6	Own	No			19
20	Mercury V8, OCM	Own	CI		Pf	TG				.011C	.015	.015C	.015	N	10BT	50AB	50BB	10AT	P	Y	Y	N	Y	N	Po	G	40-35	42	6	Own	No		No	20
21	Nash 6, 5040	Own	C1117	Own	CI	Mor	60	1	⅜	.015H	.019	.015H	.019	N	6BT	50AB	46BB	10AT	P	Y	Y	N	Y	N	Po	G	50-30		5	AL	No	No	No	21
22	6, 5060	Own	C1117	Own	CI	Mor	60	1	⅜	.015H	.0225	.018H	.0225	N	8½BT	55½AB	53½BB	10½AT	P	Y	Y	Y	Y	N	Po	G	50-30		6	AL	No	No	No	22
23	Oldsmobile 6, 76	LB	1118	LB	CI	LB	47	[illegible]	½	.006H	.0125	.011H	.0155†	N	4BT	46AB	44BB	6AT	P	Y	Y	Y	Y	N	Po	G	40-30	40	5	AC	No	No	No	23
24	V8, 88, 98	LB	1141	LB	CI	LB	48	[illegible]	½					Y	13½BT	50½AB	49½BB	14½AT	P	Y	Y	N	Y	Y	Po	G	40-30	40	5	AC	No	No	No	24
25	Packard 8-2301		Ste		CI	Mor	58	1¼	⅜	.007H	.0127	.010H	.015	N	15BT	45AB	50BB	9AT	P	Y	Y	Y	Y	Y	Po	G	40-		7		Yes	No		25
26	Super 8-2302-2332		Ste		CI	Mor	58	1¼	⅜	.007H	.0127	.010H	.015	N	15BT	45AB	50BB	9AT	P	Y	Y	Y	Y	Y	Po	G	40-		7		Yes	No		26
27	Custom 8-2306-2333		Ste		CI	Mor	62	1¼	⅜					Y	4BT	51AB	49BB	10AT	P	Y	Y	Y	Y	Y	Po	G	60-		7		Yes			27
28	Plymouth 6, P19		Ms		CI		48	1	½	.008H	.014	.010H	.014	N	12BT	44AB	50BB	6AT	P	Y	Y	N	Y	N	Po	R	45-20	45			Yes	No	No	28
29	6, P20		Ms		CI		48	1	½	.008H	.014	.010H	.014	N	12BT	44AB	50AB	6AT	P	Y	Y	N	Y	N	Po	R	45-20	45			Yes	Pur	No	29
30	Pontiac 6, 1950-25	Own	Ste	Own	Al	MC	56	1	⅜	.013H	.013H	.013H	.013H	N	5BT	30AB	45BB	5AT	P	Y	Y	Y	Y	N	Po	G	35-40	35	5	AC	No	No	No	30
31	8, 1950-27	Own	Ste	Own	Al	MC	56	[illegible]	⅜	.013H	.013H	.013H	.013H	N	5BT	30AB	45BB	5AT	P	Y	Y	Y	Y	N	Po	G	35-40	35	5	AC	No	No	No	31
32	Studebaker 6, 9G	Own	CI	CD	Fs	TG				.016C	.020	.016C	.020	N	15BT	49AB	54BB	10AT	P	Y	Y	N	Y	Y	Po	G	40-25	40	5	SW	Yes	No	No	32
33	6, 17A	Own	CI	CD	Fs	TG				.016C	.020	.016C	.020	N	15BT	49AB	54BB	10AT	P	Y	Y	N	Y	Y	Po	G	40-25	40	6	SW	Yes	Fram	No	33
34	Willys-Overland 4, 4-63		CI		Fs	TG				.016	.020	.016	N	N	9BT	50AB	47BB	12AT	P	Y	Y	N	Y	N	Po	G	35-30	34	4	KS	Yes	No	No	34
35	6, 6-63		CI		Fs	TG				.016	.020	.016	N	N	5BT	44AB	47BB	12AT	P	Y	Y	N	Y	Y	Po	G	35-30	34	5	AL	Yes	No	No	35

ABBREVIATIONS

‡—Exhaust only.
†—Open.
(a)—Duoflo splash system.
A—Automatic.
AB—After bottom center.
AC—AC Spark Plug Div.
Al—Alloy iron.
AL—The Electric Auto-Lite Co.
Alcoa—Aluminum Co. of America.
AT—After top center.
BB—Before bottom center.
BF—Bakelite and fabric composition with steel hub.
BT—Before top center.
C—Cold.
CA—Cast aluminum
CD—Continental Diamond Fiber Co.
CI—Cast iron.
Co—Composition.
F-P—Fram or Purolator.
Fram—Fram Corp.
Fs—Fiber with steel hub.
G—Gear.
H—Hot.
KS—King-Seeley Corp.
LB—Link Belt Co.
Mic—Michiana Products Corp.
Mor—Morse Chain Co.
Ms—Manganese steel.
N—No or None.
O—Oscillating plunger.
P—Pressure.
Pf—Phenolic fabric.
Po—Positive.
PS—Pressure and splash.
Pur—Purolator Prod., Inc.
R—Rotor.
Sp—Splash.
Ste—Steel.
SW—Stewart-Warner Corp.
TG—Timing gears used.
Var—Various.
Y—Yes.

For Directory of the Manufacturers listed above, see page 63.

1950 PASSENGER CARS

FUEL AND COOLING SYSTEMS

Line Number	Passenger Car Make and Model	FUEL SYSTEM: Tank Capacity (Gal.)	Feed: Type	Feed: Make	Carburetor: Make	Carburetor: Model No	Carburetor: Size (In.)	Carburetor: Type	Manifold Heat Control	Automatic Choke—Make	Air Cleaner—Make	Muffler—Make	COOLING SYSTEM: Water Pump: Type	Water Pump: Drive	Water Pump: Packing Nut	Thermostat—Make	Pressure Relief Valve	By-pass for Recirculation	Radiator Core: Type	Radiator Core: Make	Capacity of System (Qts.)	Full Length Water Jackets	Water All Around Cylinder	Lower Hose: Inside Diameter (In.)	Lower Hose: Length (In.)	Upper Hose: Inside Diameter (In.)	Upper Hose: Length (In.)	Fan Belt: Make	Fan Belt: Angle of Vee (Deg.)	Fan Belt: Length Outside (In.)	Fan Belt: Width Max. (In.)	Fan Make	Line Number
1	Buick 8, 40	19	CP	AC	S-C	(a)	1 1/4	DD	A	S-C	AC	W-H	Ce	VB	N	Ha	Y	Y	VC	Har	13	N	Y	1 3/16	ET	1 3/16	ET	Var	...	...	.750	Hay	1
2	8, 50	19	CP	AC	S-C	(a)	1 1/4	DD	A	S-C	AC	W-H	Ce	VB	N	Ha	Y	Y	VC	Har	13	N	Y	1 3/16	ET	1 3/16	ET	Var	...	...	.750	Hay	2
3	8, 70	19	CP	AC	S-C	(b)	1 1/4	DD	A	S-C	AC	W-H	Ce	VB	N	Ha	Y	Y	VC	Har	17 3/4	N	Y	1 3/16	ET	1 3/16	ET	Var	...	...	1.000	Hay	3
4	Cadillac V8, 61, 62, 60, 75	20	CP	...	Car	WCD-742-S	1 1/4	DD	A	Car	AC	W	Ce	VB	N	Fu	N	Y	FT	Har	18	Y	Y	1 3/4	8 1/16	1 3/4	8 1/16	GG	40	57	.380	Hay	4
5	Chevrolet 6, HJ, HK	16	CP	AC	R	7002050	1 1/2	DD	A	N	AC	Var	Ce	VB	N	Ha	N	N	RC	Har	15	Y	Y	1 1/2	16 1/2	1 1/4	6 3/4	Var	32	42 7/8	.688	Own	5
6	Chrysler 6, C-48	17	CP	...	Car	EX3	1 1/2	SD	A	Sis	A-I	...	Ce	VB	N	...	N	Y	Cel	Fed	17	Y	N	1 1/2	ET	1 3/4	ET	...	40	48 1/16	.750	...	6
7	8, C-49, C-50	20	CP	...	Car	E7J4	1 1/2	SD	A	Sis	AC	...	Ce	VB	N	...	Y	Y	FT	Fe-B	21	Y	N	1 3/4	4 3/4	1 3/4	ET	...	40	48 1/16	.750	...	7
8	Crosley 4, CD	6 1/2	CP	AC	Til	Dy-9C	7/8	SD	N	N	VS	Own	...	FC	Y	Fu	N	N	Tu	Yng	4	N	...	1 1/16	17	1 1/16	12 3/4	Ga	34	34	.719	Own	8
9	De Soto 6, S-14	17	CP	...	Car	EX3	1 1/2	SD	A	Sis	A-I	...	Ce	VB	N	...	N	Y	Cel	Bla	17	Y	N	1 1/2	ET	1 3/4	ET	...	40	48 1/16	.750	...	9
10	Dodge 6, D-33, D-34	17	CP	...	Str	3-93B	1 1/2	SD	A	Sis	A-I	...	Ce	VB	N	...	N	Y	Cel	Fe-B	15	Y	N	1 1/2	ET	1 3/4	ET	...	40	49 1/16	.750	...	10
11	Ford 6, DHA	16	CP	...	Hol	8-47-FS	(c)	SD	A	N	...	Var	Ce	VB	N	...	Y	Y	FT	Own	16	Y	Y	1 1/2	15	1 1/2	9 1/2	...	40	41 1/2	.380	...	11
12	V8, OBA	16	CP	...	Own	AA-1	(d)	DD	A	N	...	Var	Ce	VB	N	Var	Y	Y	FT	Own	21	Y	Y	1 3/4	6	1 1/4	14 1/2	...	38	41 3/4	.380	Var	12
13	Frazer 6, 1951	21	CP	AC	Car	WCD	1 1/4	DD	...	Car	AC	Hay	Ce	VB	N	Ha	Y	N	Cel	Fed	13 1/2	Y	Y	1 1/2	6	1 1/2	7 1/2	Gy	45	43 1/4	.375	Hay	13
14	Hudson 6, 500	20	CP	Car	Car	...	1 1/4	SD	A	Car	AC	Old	Ce	VB	N	Fu	N	Y	FT	McC	18 1/2	Y	Y	1 5/8	4	1 1/2	12 7/8	Var	48	41 1/2	.790	Hay	14
15	6, 501, 502	20	CP	Car	Car	WDO-647SA	1 1/4	DD	A	Car	AC	Old	Ce	VB	N	Fu	Y	Y	FT	McC	19	Y	Y	1 5/8	4	1 1/2	12 1/2	Var	48	41 1/2	.790	Hay	15
16	8, 503, 504	20	CP	Car	Car	WDO-648S	1 1/4	DD	A	Car	AC	Old	Ce	VB	N	Fu	Y	Y	FT	McC	18	N	N	1 5/8	4	1 1/2	12 1/2	Var	48	41 1/2	.790	Hay	16
17	Kaiser 6, 491	21	CP	AC	Car	WCD	1 1/4	SD	...	Car	AC-U	Hay	Ce	VB	N	Ha	Y	N	Cel	Fed	13 1/2	Y	Y	1 1/2	6	1 1/2	7 1/2	Gy	45	43 1/4	.375	Hay	17
18	6, 492	21	CP	AC	Car	WA-1	1 1/4	DD	...	Car	AC-U	Hay	Ce	VB	N	Ha	Y	N	Cel	Fed	13 1/2	Y	Y	1 1/2	6	1 1/2	7 1/2	Gy	45	43 1/4	.375	Hay	18
19	Lincoln V8, OEL, OEH	19 1/2	CP	...	Hol	885-FFC	(h)	DD	A	Hol	...	...	Ce	VB	N	...	Y	Y	FT	...	33	Y	Y	1 3/4	5 1/2	1 1/2	(k)	...	38	42 11/16	.375	...	19
20	Mercury V8, OCM	19 1/2	CP	...	Hol	885-FFC	1 1/32	DD	A	Hol	...	...	Ce	VB	N	...	Y	Y	FT	...	21	Y	Y	1 3/4	5 1/2	1 1/4	15 3/32	...	38	41 11/16	.375	...	20
21	Nash 6, 5040	20	CP	AC	Car	WA-1-694S	1 1/4	SD	A	Car	AC	Old	Ce	VB	N	Do	Y	N	Cel	McC	15	Y	N	1 1/2	3 1/4	1 1/2	7 3/4	...	32	41 11/16	.781	Own	21
22	6, 5060	20	CP	AC	Car	WA-1-746S	1 1/4	SD	A	Car	AC	Old	Ce	VB	N	Do	Y	N	Cel	McC	18	Y	Y	1 1/2	3 1/4	1 3/4	ET	...	32	42 3/16	.781	Own	22
23	Oldsmobile 6, 76	18	CP	AC	Car	WA-1	1 1/2	SD	A	Car	AC	W-H	Ce	VB	N	Ha	Y	Y	VC	Har	18 1/2	Y	Y	1 3/4	14 1/16	1 1/2	8 1/4	Var	28	43 5/8	.766	Hay	23
24	V8, 88	18	CP	AC	Var	...	1 1/16	DD	A	Var	AC	W-H	Ce	VB	N	Ha	Y	Y	VC	Har	21 1/2	Y	Y	1 3/4	13 7/8	1 1/2	9 1/16	Var	36	39	.375	Hay	24
25	V8, 98	18	CP	AC	Var	...	1 1/16	DD	A	Var	AC	W-H	Ce	VB	N	Ha	Y	Y	VC	Har	21 1/2	Y	Y	1 3/4	14 5/8	1 1/2	11 1/8	Var	36	39	.375	Hay	25
26	Packard 8-2301	17	CP	...	Car	WDO-644SA	1 1/4	DD	A	...	...	...	Ce	VB	N	...	...	...	Tu	...	18	...	...	1 3/4	ET	1 3/4	ET	...	40	48 11/16	.750	...	26
27	Super 8-2302-2332	20	CP	...	Car	WDO-643SA	1 1/4	DD	A	...	...	...	Ce	VB	N	...	...	...	Tu	...	19	...	...	1 3/4	ET	1 3/4	ET	...	40	(e)	.750	...	27
28	Custom 8-2306-2333	20	CP	...	Car	WDO-531SA	1 1/4	DD	A	...	...	...	Ce	VB	N	...	...	...	Tu	...	19	...	...	1 3/4	ET	1 3/4	ET	...	42	49 11/16	1.000	...	28
29	Plymouth 6, P19	17	CP	...	Car	D-6H2	1 1/2	SD	A	Sis	AUI	...	Ce	VB	N	...	N	N	Cel	Fe-B	15	Y	N	1 1/2	ET	1 3/4	ET	...	40	49 1/16	.750	...	29
30	6, P20	17	CP	...	Car	D-6H2	1 1/2	SD	A	Sis	AUI	...	Ce	VB	N	...	N	(f)	Cel	Fe-B	15	Y	N	1 1/2	ET	1 3/4	ET	...	40	49 1/16	.750	...	30
31	Pontiac 6, 1950-25	17 1/2	CP	AC	Car	WA-1-717S	1 1/16	SD	A	Car	AC	...	Ce	VB	N	Ha	Y	Y	Cel	Har	18 1/2	Y	Y	1 3/4	17 3/4	1 3/4	13 3/16	Var	28	40 11/16	.781	Own	31
32	8, 1950-27	17 1/2	CP	AC	Car	WCD-719S	1 1/16	DD	A	Car	AC	...	Ce	VB	N	Ha	Y	Y	Cel	Har	20	Y	N	1 3/4	15 1/8	1 3/4	8 11/16	Var	28	40 11/16	.781	Own	32
33	Studebaker 6, 9G	18	CP	AC	Car	WE-715S	1 1/4	SD	A	Car	US	Wal	Ce	VB	N	BB	N	N	Cel	McC	10	Y	N	1 1/4	ET	1 1/4	7	Var	45	39 7/8	.608	Hay	33
34	6, 17A	18	CP	AC	Str	BXOV-26	1 1/4	SD	A	Str	US	Wal	Ce	VB	N	F-B	N	Y	Cel	McC	13 1/2	Y	N	1 3/4	ET	1 1/4	16 11/16	Var	45	42 1/2	.802	Hay	34
35	Willys-Overland 4, 4-63	15	CP	AC	C-Z	...	1 1/4	SD	A	N	O-A	M-M	Ce	VB	N	Ha	N	N	Cel	J-H	11	Y	Y	1 1/2	ET	1 1/2	4 1/2	Var	42 1/2	44 1/16	.672	Hay	35
36	6, 6-63	15	CP	AC	C-Z	(g)	1 1/8	SD	A	N	AC	M-M	Ce	VB	N	Ha	N	N	Cel	J-H	8 3/4	Y	Y	1 1/2	ET	1 1/2	ET	Var	41 1/2	37 1/4	.688	Hay	36

ABBREVIATIONS

(a)—Stromberg AAVVB-267 or Carter WCD-725S.
(b)—Stromberg AAVB-267 or Carter WCD-726S.
(c)—Venturi 1.217.
(d)—Venturi .940.
(e)—Model 2302—48 11/16. Model 2332—49 11/16.
(f)—Model P-20 Deluxe—No. Model P-20 Special Deluxe—Yes.
(g)—Carter WA1-645-15 or Zenith 228AVID.
(h)—Venturi 1 3/32.
(k)—Right hand, 8.1 in. and left hand, 7.0 in.
A—Automatic.
AC—AC Spark Plug Div.
AC-U—AC or United.
A-I—AC or Industrial.
AUI—AC, United or Industrial.
B-B—Bishop and Babcock.
Bla—Blackstone Corp.
Car—Carter Carburetor Co.
Ce—Centrifugal.
Cel—Cellular.
CP—Camshaft pump.
C-Z—Carter or Zenith.
DD—Dual downdraft.
Do—Dole Valve Co.
ET—Elbow type.
F-B—Fulton or Bishop and Babcock.
FC—Flexible coupling.
Fe-B—Fedders or Blackstone.
Fed—Fedders Mfg. Co.
FT—Fin and tube.
Fu—Fulton Sylphon Div.
Ga—Gates Rubber Co.
GG—Gates and Goodyear.
Gy—Goodyear Rubber Co.
Har—Harrison Radiator Div.
Hay—Hayes Industries.
Hol—Holley Carburetor Co.
J-H—Jamestown or Harrison.
McC—McCord Radiator Co.
M-M—MacKenzie or Maremont.
N—No or None.
O-A—Oakes or AC.
Old—Oldberg Mfg. Co.
R—Rochester Products.
RC—Ribbed cellular.
S-C—Stromberg or Carter.
SD—Single downdraft.
Sis—Sisson (Pierce Governor Co.).
Str—Stromberg Carburetor Co.
Til—Tillotson Mfg. Co.
Tu—Tubular.
US—United Specialties Co.
Var—Various.
VB—Vee belt.
VC—Vee cellular.
Wal—Walker Mfg. Co.
W-H—Walker or Hayes.
Y—Yes.
Yng—Young Radiator Co.

For Directory of the Manufacturers listed above, see page 63.

1950 PASSENGER CARS

IGNITION SYSTEMS AND BATTERIES

Line Number	Passenger Car Make and Model	Ignition: Make	Ignition: Model	Max. Automatic Advance (Deg.) at What Engine R.P.M.	Inches Mercury Required for Vacuum Advance (±1 In.)	Max. Vacuum Advance—Crankshaft (Deg.)	Breaker Point: Gap (In.)	Breaker Point: Arm Tension (Oz.)	Cam Angle (Deg.)	Timing: Spark Occurs (Deg.)	Timing: Marks On	Timing: Firing Order	Coil Amperage Draw: Engine Stopped	Coil Amperage Draw: Engine Idling	Spark Plugs: Make	Spark Plugs: Model	Spark Plugs: Thread Size	Spark Plugs: Gap (In.)	Ignition Cable Make	Battery: Make	Battery: Capacity—Amp. Hrs. at 20 Hr. Rate	Battery: Plates per Cell	Bench Charging Rate: Start (Amp.)	Bench Charging Rate: Finish (Amp.)	Terminal Grounded	Location	Line Number
1	Buick 8, 40	DR	1110815	26.0-3000	6.0†	10-12	.015	19-23	*	4BT	Fly	1,6,2,5,8,3,7,4	4.50	2.50	AC	46	14	.025	Pak	DR	100	15	▲	▲	Neg	UH	1
2	8, 50	DR	1110815	26.0-3000	6.0†	10-12	.015	19-23	*	4BT	Fly	1,6,2,5,8,3,7,4	4.50	2.50	AC	46	14	.025	Pak	DR	100	15	▲	▲	Neg	UH	2
3	8, 70	DR	1110815	26.0-3000	6.0†	10-12	.015	19-23	*	6BT	Fly	1,6,2,5,8,3,7,4	4.50	2.50	AC	46	14	.025	Pak	DR	120	17	▲	▲	Neg	UH	3
4	Cadillac V8, 61, 62, 60, 75	DR	......	32.0-3800	5.0‡	18-22	.015	19-23	31	5BT	......	1,8,4,3,6,5,7,2	5.00	2.50	AC	46-5	14	.035	Pak	DR	115	17	10.0	8.0	Neg	UR	4
5	Chevrolet 6, HJ, HK	DR	1112353	39.5-3450	7.0	20	.021	17-21	31	5BT	Fly	1,5,3,6,2,4	4.50	2.50	AC	46-5	14	.035	Var	DR	100	15	......	7.0	Neg	UR	5
6	Chrysler 6, C-48	AL	......	22.0-2850	4.0	16-20	.020	17-20	35½	TC	VD	1,5,3,6,2,4	5.00	2.25	AL	AR5	14	.035	......	W-A	120	17	......	......	Pos	UL	6
7	8, C-49, C-50	AL	......	22.0-3100	4.0	14-18	.018	17-20	23½	TC	VD	1,6,2,5,8,3,7,4	5.00	2.25	AL	AR5	14	.035	......	W-A	135	19	......	......	Pos	UL	7
8	Crosley 4, CD	AL	UG-V-4181-C	34.0-3000	None	......	.020	17-20	46	2BT	Fly	1,3,4,2	5.00	2.00	AL	AN-7E	14	.025	EX	......	70	11	6.0	4.0	Pos	UL	8
9	De Soto 6, S-14	AL	......	22.0-2850	4.0	16-20	.019	17-20	35½	TC	VD	1,5,3,6,2,4	5.00	2.25	AL	AR5	14	.035	......	W-A	114	17	......	......	Pos	UL	9
10	Dodge 6, D-33	AL	......	22.0-2850	4.0	14-18	.020	17-20	35½	TC	CP	1,5,3,6,2,4	5.00	2.25	AL	AR5	14	.035	......	W-A	105	15	......	......	Pos	UL	10
11	6, D-34	AL	......	22.0-2850	4.0	14-18	.020	17-20	35½	TC	VD	1,5,3,6,2,4	5.00	2.25	AL	AR5	14	.035	......	W-A	105	15	......	......	Pos	UL	11
12	Ford 6, OHA	Own	OHA	None	......	28	.025	17-20	35½	TC	VD	1,5,3,6,2,4	5.00	2.06	CH	H-10	14	.030	......	......	100	17	9.0	4.0	Pos	UH	12
13	V8, OBA	Own	OBA	None	......	27	.015	17-20	27¼	2BT	CP	1,5,4,8,6,3,7,2	5.25	3.35	CH	H-10	14	.030	......	Var	90	15	9.0	4.0	Pos	UH	13
14	Frazer 6, 1951	AL	IGS-4214	18.0-3450	10.0	10	.020	17-20	33	4BT	VD	1,5,3,6,2,4	......	......	AL	A5	14	.032	Pak	Wil	100	15	......	......	Pos	UL	14
15	Hudson 6, 500	AL	CR-6012A	20.0-2400	12.0	10	.020	17-20	......	TC	Fly	1,5,3,6,2,4	5.00	1.75	CH	J-7	14	.032	EX	Nat	100	17	......	......	Pos	UL	15
16	6, 501, 502	AL	CE-6006	35.0-3400	16.0	8	.020	17-20	39	TC	Fly	1,5,3,6,2,4	4.50	2.50	CH	H-3	14	.033	EX	Nat	100	17	......	......	Pos	UL	16
17	8, 503, 504	AL	CE-6006	35.0-3400	16.0	8	.017	17-20	27	TC	Fly	1,6,2,5,8,3,7,4	4.50	2.50	CH	H-8	14	.038	EX	Nat	100	17	......	......	Pos	UL	17
18	Kaiser 6, 491, 492	AL	IGS-4214	18.0-3450	10.0	10	.020	17-20	33	4BT	VD	1,5,3,6,2,4	......	......	AL	A5	14	.032	Pak	Wil	100	15	......	......	Pos	UL	18
19	Lincoln V8, OEL, OEH	......	OEL	None	(f)	21	.015	17-20	27¼	4BT	VD	1,5,4,8,6,3,7,2	5.00	3.00	CH	H-10	14	.025	EX	Var	120	17	9.0	4.0	Pos	UR	19
20	Mercury V8, OCM	......	OCM	None	(g)	21	.015	17-20	27¼	2BT	CP	1,5,4,8,6,3,7,2	5.00	3.00	CH	H-10	14	.025	EX	Var	100	17	9.0	4.0	Pos	UL	20
21	Nash 6, 5040	DR	1112351	22.0-2800	15.0	15	.021	17-21	35	TC	VD	1,5,3,6,2,4	......	......	AL	A5	14	.030	......	AL	90	13	9.0	6.0	Pos	UL	21
22	6, 5060	DR	1110216	28.0-2700	15.0	12	.021	17-21	35	TC	......	1,5,3,6,2,4	......	......	A-A	(a)	14	.030	......	AL	105	15	10.0	7.0	Pos	UL	22
23	Oldsmobile 6, 76	DR	1110221	22.0-3200	6.0	16	.021	17-21	35	TC	Fly	1,5,3,6,2,4	4.50	2.00	AC	46	14	.040	Own	DR	100	15	12.5	4.5	Neg	UH	23
24	V8, 88, 98	DR	1110817	30.0-3700	7.5	20	.015	19-23	22	2½BT	CP	1,8,7,3,6,5,4,2	4.50	2.00	AC	45	14	.030	Own	DR	115	17	12.5	5.2	Neg	UH	24
25	Packard 8-2301, Super 8-2302-32	(b)	(b)	......	......	......	.015	(c)	......	6BT	......	1,6,2,5,8,3,7,4	4.50	2.75	(d)	(d)	10	.028	......	W-A	100	15	......	......	Pos	UL	25
26	Custom 8-2306-33	AL	IGT-4203	......	......	......	.015	19-23	......	6BT	......	1,6,2,5,8,3,7,4	4.50	2.75	(d)	(d)	10	.028	......	AL	120	17	......	......	Pos	UL	26
27	Plymouth 6, P-19, P-20	AL	......	22.0-2850	4.0	16	.020	17-20	35½	TC	......	1,5,3,6,2,4	5.00	2.25	AL	AR5	14	.035	......	W-A	100	15	......	......	Pos	UL	27
28	Pontiac 6, 1950-25	DR	1110222	25.0-4000	8.0	15	.022	17-21	34	6BT	VD	1,5,3,6,2,4	......	2.50	AC	45	14	.025	Pak	DR	100	15	7.0	7.0	Neg	UL	28
29	8, 1950-27	DR	1110818	25.0-4200	8.0	20	.016	19-23	25½	6BT	VD	1,6,2,5,8,3,7,4	......	2.50	AC	45	14	.025	Pak	DR	100	15	7.0	7.0	Neg	UL	29
30	Studebaker 6, 9G	AL	IAT-4001	14.0-2800	4.0	18	.020	17-20	39	2BT	VD	1,5,3,6,2,4	4.50	1.00	CH	J-7	14	.025	A-P	Wil	100	15	5.8	5.8	Pos	UL	30
31	6, 17A	DR	1110220	22.0-2800	4.0	12	.022	17-21	31	2BT	VD	1,5,3,6,2,4	4.50	1.00	CH	J-7	14	.025	A-P	Wil	100	15	5.8	5.8	Pos	UL	31
32	Willys-Overland 4, 4-63	AL	IGW	22.0-3000	3.5	20	.022	17-20	50.8	5BT	Fly	1,3,4,2	5.00	......	AL	AN-7	14	.030	AW	AL	100	15	......	......	Neg	UR	32
33	6, 6-63	AL	IGC	22.0-3000	3.0	14	.020	17-20	38½	TC	VD	1,5,3,6,2,4	......	......	(e)	(e)	14	.030	AW	W-A	100	15	......	......	Neg	UR	33

ABBREVIATIONS

†—Six to start, 12 for full travel.
▲—Start 1 amp. per positive plate, finish 1 amp. per positive plate.
*—Do not recommend using dwell meter for checking point opening.
‡—Five to start, 14 for full travel.

(a)—AC-44 or Auto-Lite A5.
(b)—Auto-Lite-IGP-4502B or Delco-Remy-1110811.
(c)—Auto-Lite-19-23 or Delco-Remy-17-21.
(d)—Auto-Lite-P-4, AC-104, or Champion Y4A.
(e)—Auto-Lite AN-7 or Champion J-7.
(f)—.5 in. to 6.1 in.
(g)—.17 in. to 5.0 in.
AA—AC or Auto-Lite.
AC—AC Spark Plug Div.
AL—The Electric Auto-Lite Co.
AP—Auto-Lite or Packard.

AW—American Enamel Mag. Wire Co.
BT—Before top center.
CH—Champion Spark Plug Co.
CP—Crankshaft pulley.
DR—Delco-Remy Div.
EX—Essex Wire Corp.
Fly—Flywheel.

Nat—National Battery Co.
Neg—Negative.
Pak—Packard Electric Co.
Pos—Positive.
TC—Top center.
UH—Under hood.
UL—Under hood—left side.

UR—Under hood—right side.
Var—Various.
VD—Vibration damper.
W-A—Willard or Auto-Lite.
Wil—Willard Storage Battery Co.

For Directory of the Manufacturers listed above, see page 63.

1950 PASSENGER CARS

STARTING MOTORS, LAMPS AND HORNS

Line Number	PASSENGER CAR MAKE AND MODEL	STARTING MOTORS: Make	Model	Cranking Speed (R.P.M.)	Brush Spring Tension (Oz.)	Lock Test: Amperage Draw	Lock Test: Volts	Lock Test: Torque (Lb. Ft.)	No Load Test: Amperage Draw	No Load Test: Volts	No Load Test: R.P.M.	Type of Drive	Starting Device	Starting Operation	Pinion Meshes	Flywheel: No. of Teeth	Flywheel: Face Width of Teeth	Flywheel: Ratio to Starter Armature (to -1)	LAMPS: Make—Lighting Switch	Tail and Dash Lights in Series	Head Lamp—Make	Parking or Fender Light—Make	Tail and Stop Light—Make	HORNS: Type	Number Used	Make	Amperage Draw of Each	Line Number
1	Buick ... 8, 40	DR	1107078	90	24-28	525	3.37	12.0	65.0	5.67	5000	Sgo	Sol	Dap	F	146	.547	16.22	DR	No	Guide	Guide	Guide	Vib	2	DR	18-20	1
2	... 8, 50	DR	1107078	90	24-28	525	3.37	12.0	65.0	5.67	5000	Sgo	Sol	Dap	F	146	.547	16.22	DR	No	Guide	Guide	Guide	Vib	2	DR	18-20	2
3	... 8, 70	DR	1107953	90	24-28	600	3.00	16.0	65.0	5.67	5500	Sgo	Sol	Dap	F	156	.672	17.33	DR	No	Guide	Guide	Guide	Vib	2	DR	18-20	3
4	Cadillac ... V8, 61, 62, 60, 75	DR	1107969	...	24-28	600	3.10	16.0	65.0	5.67	5500	...	Sol	Pbd	F	145	.500	16.10	DR	No	Guide	Guide	Guide	Vib	2	DR	19-21	4
5	Chevrolet ... 6, HJ, HK	DR	1107075	125	24-28	525	3.40	12.0	65.0	5.00	5000	...	Sol	Pbd	F	139	.500	15.44	DR	No	Guide	Guide	Guide	Vib	2	DR	18-20	5
6	Chrysler ... 6, C-48	AL	...	150	42-53	530	3.40	13.0	57.5	6.00	5300	Sgo	Sol	Bik	F	146	.500	16.22	...	No	...	...	...	Vib	2	DR	20	6
7	... 8, C-49, C-50	AL	...	150	42-53	530	3.40	13.0	57.5	6.00	5300	Sgo	Sol	Bik	F	146	.500	16.22	...	No	...	...	...	Vib	2	DR	20	7
8	Crosley ... 4, CD	AL	MZ-4147	250	...	280	2.00	4.4	70.0	5.50	4300	Ben	Sol	Pbd	R	88	.375	8.80	Dgs	No	AL	AL	AL	Vib	1	Spar	7	8
9	De Soto ... 6, S-14	AL	...		42-53	525	3.40	12.5	57.5	6.00	4900	Sgo	Sol	Bik	F	146	.500	16.22	...	No	...	...	...	Vib	2	...	20	9
10	Dodge ... 6, D-33, D-34	AL	...	...	42-53	525	3.40	12.5	57.5	6.00	4900	Ben	Sol	Bik	...	...	...	...	...	No	...	...	...	Vib	2	...	20	10
11	Ford ... 6, OHA	Own	7HA	150	27	550	3.75	15.0	52.5	5.80	4500	Ben	Sol	Pbd	R	114	.375	12.70	...	No	Own	Own	Own	A-E	2	...	11	11
12	... V8, OBA	Own	7RA	130	27	550	3.75	15.0	52.5	5.80	4500	Ben	Sol	Pbd	R	112	.375	11.20	...	No	Own	Own	Own	A-E	2	Var	11	12
13	Frazer ... 6, 1951	AL	MAW-4054	...	42-53	505	3.00	11.5	65.0	5.50	4900	...	Sol	Pbd	F	130	...	14.45	C-H	No	Hall	AL	AL	Viv	2	Var	...	13
14	Hudson ... 6, 500	AL	MZ-4159	120	42-53	540	4.00	12.3	70.0	5.50	4300	Ben	Sol	Pbd	R	134	.406	14.90	JPH	No	Hall	AL	AL	Vib	1	S-W	15	14
15	... 6, 501, 502	AL	MCL6306	...	53	880	4.00	25.0	58.0	5.50	5600	Ben	Sol	Pbd	R	134	.406	14.90	JPH	No	Hall	AL	AL	A-E	2	S-W	15	15
16	... 8, 503, 504	AL	MCL6006	...	53	880	4.00	25.0	58.0	5.50	5600	Ben	Sol	Pbd	R	134	.406	14.90	JPH	No	Hall	AL	AL	A-E	2	S-W	15	16
17	Kaiser ... 6, 491, 492	AL	MAW-4054	...	42-53	505	3.00	11.5	65.0	5.50	4900	...	Sol	Pbd	F	130	...	14.45	C-H	No	Hall	AL	AL	Vib	2	Var	...	17
18	Lincoln ... V8, OEL, OEH	Own	8EL	120	48-56	560	3.25	15.0	52.5	5.80	6500	Ben	Sol	Pbd	R	120	.375	12.00	...	No	Own	Own	Own	A-E	2	ASW	11	18
19	Mercury ... V8, OCM	Own	7RA	130	48-56	550	3.75	15.0	52.5	5.80	4500	Ben	Sol	Pbd	R	112	.375	11.20	...	No	Own	Own	Own	A-E	2	ASW	11	19
20	Nash ... 6, 5040	DR	1109451	...	24-28	540	3.30	11.5	60.0	5.70	6000	Ben	Man	Dcp	R	122	.438	13.50	Dgs	No	Hall	C-B	C-B	Vib	2	AL	15	20
21	... 6, 5060	DR	1107950	...	24-28	600	3.00	16.0	60.0	5.00	6000	Ben	Man	Dcp	R	104	.438	...	Dgs	No	Hall	C-B	C-B	Vib	2	AL	15	21
22	Oldsmobile ... 6, 76	DR	1107955	120	24-28	600	3.00	15.0	80.0	5.70	5500	...	Sol	Pbd	F	145	.500	16.11	DR	No	Guide	Guide	Guide	Vib	2	DR	18-20	22
23	... V8, 88, 98	DR	1107956	120	24-28	600	3.00	15.0	80.0	5.70	5500	...	Sol	Pbd	F	145	.375	16.11	DR	No	Guide	Guide	Guide	Vib	2	DR	18-20	23
24	Packard. 8-2301, Sup. 8-2302-32	(a)	(a)	...	...	(b)	(b)	(b)	...	...	...	Ben	...	Pbd	F	140	...	15.55	...	...	...	...	...	...	2	S-W	22-25	24
25	Custom 8-2306-33	AL	MAX-4052	...	...	906	4.00	45.9	...	...	...	...	Sol	Pbd	F	140	...	15.55	...	...	...	...	...	...	2	S-W	22-25	25
26	Plymouth ... 6, P-19, P-20	AL	MCH-6101	...	42-53	525	3.40	12.5	57.5	6.00	4900	Ben	Sol	Bik	F	146	.520	16.22	...	No	...	...	...	Vib	2	...	20	26
27	Pontiac ... 6, 1950-25	DR	1107079	54	24-28	525	3.37	12.0	60.0	5.67	5000	Sgo	Sol	Pbd	R	140	.500	15.55	DR	No	Guide	Guide	Guide	Vib	2	DR	18-21	27
28	... 8, 1950-27	DR	1107957	54	24-28	600	3.00	14.0	60.0	5.67	5500	Sgo	Sol	Pbd	R	140	.500	15.55	DR	No	Guide	Guide	Guide	Vib	2	DR	18-21	28
29	Studebaker ... 6, 9G	AL	MZ4157	130	42-53	560	4.00	11.8	70.0	5.60	4300	Ben	Sol	Pbd	F	124	.375	13.77	Dgs	No	C-B	C-B	C-B	Vib	2	DRS	12-15	29
30	... 6, 17A	DR	1107084	130	24-28	525	3.40	12.0	65.0	5.70	5000	Ben	Sol	Pbd	F	133	.375	14.78	Dgs	No	C-B	C-B	C-B	Vib	2	DRS	12-15	30
31	Willys-Overland ... 4, 4-63	AL	MZ	160	42-53	420	3.00	7.8	70.0	5.80	4300	Sgo	Man	Dap	F	124	.375	13.80	CS	No	H-C	...	C-B	Vib	2	ASW	7-9	31
32	... 6, 6-63	AL	MZ	160	42-53	420	3.00	7.8	70.0	5.80	4300	Sgo	Man	Dap	F	124	.375	13.80	CS	No	H-C	(c)	AL	Vib	2	ASW	7-9	32

ABBREVIATIONS

(a)—Auto-Lite MCL-6003 or Delco-Remy 1107943.
(b)—Auto-Lite 875 amps., 4 volts, 25 lb. ft. or Delco-Remy 600 amps., 3 volts, 16 lb. ft.
(c)—Assembled by Willys-Overland.

A-E—Air and electric.
AL—Electric Auto-Lite Co.
ASW—Auto-Lite and Sparks-Worthington.
Ben—Bendix-Eclipse Machine Div.
Bik—By ignition key turned beyond "on" position.
C-B—Corcoran-Brown Lamp Div.

C-H—Cole-Hersee. **CS**—Culver-Stearns.
Dap—Depress accelerator pedal.
Dcp—Depress clutch pedal.
Dgs—H. A. Douglas Mfg. Co.
DR—Delco-Remy Div.
DRS—Delco-Remy and Sparton.
Dsp—Depress starter pedal.

F—Front.
Guide—Guide Lamp Div.
Hall—C. M. Hall Lamp Co.
H-C—Hall or Corcoran-Brown.
JPH—Jos. Pollach and Cole-Hersee.
Man—Manual.
Pbd—Push button on dash.

R—Rear.
Sgo—Sliding gear with overrunning clutch.
Sol—Solenoid.
Spar—Sparton.
S-W—Sparks-Worthington Co.
Var—Various.
Vib—Vibrator.

For Directory of the Manufacturers listed above, see page 63.

1950 PASSENGER CARS

GENERATORS AND CLUTCHES

Line Number	Passenger Car Make and Model	Generator: Make	Generator: Model	Generator: Type	Generator: Brush Spring Tension (Oz.)	Generator: Charging Control	Maximum Controlled Charging Rate: Temperature (°F)	Maximum Controlled Charging Rate: Amperes	Maximum Controlled Charging Rate: Voltage	Maximum Controlled Charging Rate: R.P.M.	Cutout Relay: Voltage at Closing	Cutout Relay: Amperes to Open Reverse Current	Cutout Relay: Average Air Gap (In.)	Voltage Regulator: Volts	Voltage Regulator: Temperature (°F)	Voltage Regulator: Average Air Gap (In.)	Current Regulator: Amperes	Current Regulator: Temperature (°F)	Current Regulator: Average Air Gap (In.)	Car Speed Max. Charging Rate—M.P.H.	Ammeter—Make	Clutch: Make	Clutch: Drive Type	Clutch: Semi-Centrifugal	Clutch: Vibration Insulator	Facings: Material	Facings: Inside Diam. (In.)	Facings: Outside Diam. (In.)	Facings: Thickness (In.)	Facings: No. Required	Line Number
1	Buick 8, 40	DR	1102709	Shu	24-32	CV	Hot	40	8.0	2400	6.1-6.8	1-6	.020	7.40	150	.075	40-46	150	.075	25.0	AC	Own*	Dff	No	Spr	Wo	6	10	.125	2	1
2	8, 50	DR	1102709	Shu	24-32	CV	Hot	40	8.0	2400	6.1-6.8	1-6	.020	7.40	150	.075	40-46	150	.075	25.0	AC	Own*	Dff	No	Spr	Wo	6	10	.125	2	2
3	8, 70	DR	1102709	Shu	24-32	CV	Hot	40	8.0	2400	6.1-6.8	1-6	.020	7.40	150	.075	40-46	150	.075	25.0	AC	None									3
4	Cadillac V8, 61	DR	1102700	Shu	24-28	CV	150	42	8.0	2400	6.40		.020	7.40	150	.075	42	150	.075	28.0	AC	Long	Dff	Yes	Spr	Wo	7	10½	.137	2	4
5	V8, 62, 60	DR	1102700	Shu	24-28	CV	150	42	8.0	2400	6.40		.020	7.40	150	.075	42	150	.075	28.0	AC	None									5
6	V8, 75	DR	1102700	Shu	24-28	CV	150	42	8.0	2400	6.40		.020	7.40	150	.075	42	150	.075	28.0	AC	Long	Dff	Yes	Spr	Wo	7	11	.137	2	6
7	Chevrolet 6, HJ, HK	DR	1102710	Shu	24-28	CV	72	36	7.4	2400	6.40	0-4	.020	7.40	Op	.080	36	Op	.080	25.7	AC	(a)	Dff	No	Spr	MA	6⅛	9⅛	.135	2	7
8	Chrysler 6, C-48 Royal	AL		Shu	40-55	CV	Hot	40	8.0	2200	6.4-7.0	4-6	.032	7.2-7.5	70	.050	40-51		.050			B&B	Dff		Spr		7	10	.125	2	8
9	6, C-48 Windsor	AL		Shu	40-55	CV	Hot	40	8.0	2200	6.4-7.0	4-6	.032	7.2-7.5	70	.050	40-51		.050			B&B	Ff•		Spr		6	9¼	.125	2	9
10	8, C-49	AL		Shu	35-50	CV	Hot	45	8.0	1775	6.4-7.0	4-6	.032	7.2-7.5	70	.050	45-55		.050			B&B	Ff•	No	Spr	WMA	6	10	.125	2	10
11	8, C-50	AL		Shu	28-40	CV	Hot	50	8.0	1690	6.4-7.0	4-6	.032	7.2-7.5	70	.050	50-62		.050			B&B	Ff•	No	Spr	WMA	6	10	.125	2	11
12	Crosley 4, CD	AL	GDZ-4806	Shu	35-53	CV		35	8.0	1900	6.4-7.0	4-6	.032	7.35	70		34-36		.050	40.0	SW	Rock	Dff	No		MA	4	6	.125	2	12
13	De Soto 6, S-14 Deluxe	AL		Shu	40-55	CV	Hot	40	8.0	2200	6.7-7.0	4-6	.032	7.2-7.5	70	.050	40-51		.050			B&B	Dff	No	Spr	WMA	7	10	.125	2	13
14	Dodge 6, S-14 Custom	AL		Shu	40-55	CV	Hot	40	8.0	2200	6.7-7.0	4-6	.032	7.2-7.5	70	.050	40-51		.050			B&B	Ff•	No	Spr	WMA	6	9¼	.125	2	14
15	6, D-33, D-34	AL		Shu	40-55	CV	Hot	40	8.0	2200	6.4-7.0	4-6	.032	7.2-7.5	70	.050	40-51		.050	25		B&B	Ff•	No	Spr	WMA	6	9¼	.125	2	15
16	Ford 6, OHA	Own	8HA	Shu	28	CV	98	35	7.1	1700	6.2-7.0	8	.016	7.2-7.6	75	.035	34-38	75	.035	18.5	Own	Long	Dff	Yes	Spr	WA	6	9½	.125	2	16
17	V8, OBA	Own		Shu	28	CV	98	35	7.1	1700	6.6-7.0	8	.016	7.2-7.6	75	.035	34-38	75	.035	19.2	Own	Long	Dff	Yes	Spr	WA	6	9½	.125	2	17
18	Frazer 6, 1951	AL	GDZ-4818A	Shu	35-53	CV	70	35	7.2	2250	6.4-7.0	4.5	.032	7.35	70	.060	34-36	70	.050	24.0	AL	B&B	Dff		Spr	WA	6	9¼	.125	2	18
19	Hudson 6, 500	AL	GDZ-6001B	Shu	35-53	CV	Hot	35	8.0	2350	6.4-7.0	4-6	.032	7.2-7.5	70	.060	35	70	.050	22.0	IL	Own	Dff	No	Spr	Cork	6¼	8 11/16	.203	90	19
20	6, 501, 502	AL	GDZ-6001B	Shu	35-53	CV	Hot	35	8.0	2350	6.4-7.0	4-6	.032	7.2-7.5	70	.050	35	70	.050	22.0	IL	Own	Dff	No	Spr	Cork	6⅜	9 11/16	.203	108	20
21	6, 503, 504	AL	GDZ-6001B	Shu	35-53	CV	Hot	35	8.0	2350	6.4-7.0	4-6	.032	7.2-7.5	70	.060	35	70	.050	22.0	IL	Own	Dff	No	Spr	Cork	6⅜	9 11/16	.203	108	21
22	Kaiser 6, 491, 492	AL	GDZ-4818A	Shu	35-53	CV	70	35	7.2	2250	6.4-7.0	4.5	.032	7.35	70	.060	34-38	70	.630	24.0	KS	B&B	Dff		Spr	WA	6	9¼	.125	2	22
23	Lincoln V8, OEL, OEH	Own	8EL	Shu	28	CV	90	40	7.1	1675	6.0-6.6	8	.010	7.2-7.6	75	.035	38-42		.035	19.5	Own	Long	Dff	Yes	Spr	WA	7	10½	.125	2	23
24	Mercury V8, OCM	Own	8BA	Shu	28	CV	90	35	7.1	1700	6.0-6.6	8	.010	7.2-7.6	75	.035	30-34		.035	17.8	Own	B&B	Dff	No	Spr	WA	6¾	10	.125	2	24
25	Nash 6, 5040	DR	1102702	Shu	24-28	CV		35	7.4		6.2-6.7	4-6	.020	7.2-7.4		.070	32-35		.060		AL	B&B	Dff	No	Spr	Wo	6⅝	8	.125	2	25
26	6, 5060	DR	1102702	Shu	24-28	CV		35	7.4		6.2-6.7	4-6	.020	7.2-7.4		.070	32-35		.060		AL	B&B	Dff	No	Spr	Wo	7	10	.125	2	26
27	Oldsmobile 6, 76	DR	1102706	Shu	24-28	CV	70	40	8.0	1880	6.50	0-4	.020	7.30	150	.075	40	150	.075	22.0	AC	B&B	Dff	No	Spr	WMA	7	10	.125	2	27
28	V8, 88	DR	1102704	Shu	24-28	CV	70	40	8.0	1880	6.50	0-4	.020	7.30	150	.075	40	150	.075	22.0	AC	Long	Dff	Yes	Spr	WA	7	10½	.137	2	28
29	V8, 98	DR	1102704	Shu	24-28	CV	70	40	8.0	1880	6.50	0-4	.020	7.30	150	.075	40	150	.075	21.0	AC	Long	Dff	Yes	Spr	WA	7	10½	.137	2	29
30	Packard 8-2301	(b)	(b)	Shu		CV		40	7.4		6.5-7.0												Dff		Spr	WA	6¾	10	.125	2	30
31	Super 8-2302-2332	(c)	(c)	Shu		CV		(e)	7.4		6.5-7.0												Dff		Spr	WA	7	10½	.125	2	31
32	Custom 8-2306-2333	AL	(d)	Shu		CV		(e)	7.4		6.5-7.0											None									32
33	Plymouth 6, P19	AL	GGW-6001	Shu	40-55	CV	Hot	40	8.0	2200	6.4-7.0	4-6	.032	7.2-7.5	70	.060	40-51		.060	25.0		B&B	Dff	No	Spr	WMA	6⅛	9⅛	.125	2	33
34	6, P20	AL	GGW-6001	Shu	40-55	CV	Hot	40	8.0	2200	6.4-7.0	4-6	.032	7.2-7.5	70	.060	40-51		.050	25.0		B&B	Dff	No	Spr	WMA	6	9¼	.125	2	34
35	Pontiac 6, 1950-25	DR	1102711	Shu	24-32	CV	Hot	36	7.4	1800	5.9-6.8		.020	7.0-7.7	150	.075	32-40	150	.075	19.0	AC	Inl	Dff		Spr	Wo	6	9½	.125	2	35
36	8, 1950-27	DR	1102711	Shu	24-32	CV	Hot	36	7.4	1800	5.9-6.8		.020	7.0-7.7	150	.075	32-40	150	.075	21.0	AC	Inl	Dff		Spr	Wo	6¾	10	.125	2	36
37	Studebaker 6, 9G	AL	GDZ-4804A	Shu	53	CV	70	35	7.4	1900	6.4-6.8		.036	7.35	70	.060	34-38	70	.050	21.2	SW	B&B	Dff	No	Spr	MM	6⅝	8	.125	2	37
38	6, 17A	DR	1102728	Shu	24-28	CV	Cold	35	7.3	2300	6.40		.020	7.40	Hot	.075	36	Hot	.075	22.0	SW	B&B	Dff	No	Spr	MM	6	9¼	.125	2	38
39	Willys-Overland 4, 4-63	AL	GDZ	Shu	35-53	CV	80	34	8.0	1900	6.4-7.0	4-6	.032	7.35	70	.060	34-36	70	.050		KS	A-R	Dff		Spr	MA	5½	8½	.135	2	39
40	6, 6-63	AL	GDZ	Shu	35-53	CV	80	34	8.0	1900	6.4-7.0	4-6	.032	7.35	70	.060	34-36	70	.050		KS	A-R	Dff		Spr	MA	5½	8½	.135	2	40

ABBREVIATIONS

*—Long or Borg & Beck disk.
•—Auxiliary clutch used with fluid flywheel.
(a)—Driven disk-own and Borg & Beck, reminder-own and Inland.
(b)—Auto-Lite-GGW-6001E, or Delco-Remy 1102715.
(c)—Model 2302-Auto-Lite-GGW-6001E; model 2332-Auto-Lite-GGV-6001C, or Delco-Remy-0118360.
(d)—Model 2306-GGW-6001F, model 23333-GGV-6001D.
(e)—Models 2302 and 2306-40 amps; models 2332 and 2333-45 amps.

AC—AC Spark Plug Div.
AL—The Electric Auto-Lite Co.
A-R—Atwood or Rockford.
B&B—Borg & Beck Div.
CV—Current and voltage regulator.
Dff—Direct to flywheel face.
DR—Delco-Remy Div.

Ff—Fluid flywheel.
IL—Indicating light.
Inl—Inland Mfg. Co.
KS—King-Seely Corp.
Long—Long Mfg. Div.
MA—Moulded asbestos.
MM—Moulded metallic.

Op—Operating temperature.
Rock—Rockford Drilling Mach. Div.
Shu—Shunt. Spr—Spring.
SW—Stewart-Warner Corp.
WA—Woven asbestos.
WMA—Woven moulded asbestos.
Wo—Woven.

For Directory of the Manufacturers listed above, see page 63.

TRANSMISSIONS AND UNIVERSAL JOINTS

Line Number	Passenger Car Make and Model	Transmission: Conventional	Transmission: Automatic: Name	Transmission: Automatic: Type	Transmission: Make	Overdrive: Lubrication: Capacity (Pts.)	Overdrive: Lubrication: Grade S.A.E. No.: Summer	Overdrive: Lubrication: Grade S.A.E. No.: Winter	Gear Ratios—Std. (to-1): Rear Axle	Gear Ratios—Std.: Transmission: Overdrive	Gear Ratios—Std.: Transmission: Low	Gear Ratios—Std.: Transmission: Second	Gear Ratios—Std.: Transmission: Reverse	Constant Mesh Gears on Second	Type Gears: Second Speed	Type Gears: First Speed	Type Gears: Reverse	Synchronous Meshing Second and Third Gears	Transmission Lubrication: Capacity (Pts.)	Transmission Lubrication: Grade S.A.E. No.: Summer	Transmission Lubrication: Grade S.A.E. No.: Winter	Universal Joints: Make	Universal Joints: Number Used	Universal Joints: Type	Universal Joints: Lubricated With	Drive Medium	Torque	Line Number
1	Buick 8, 40	Yes	Dynaflow*	TC	None				4.10	None	2.67	1.66	3.02	Yes	Hel	Hel	Hel	Yes	1¾	90	90	S-S	1	Mp	TL	TT	TT	1
2	8, 50	Yes	Dynaflow*	TC	None				3.90	None	2.67	1.66	3.02	Yes	Hel	Hel	Hel	Yes	1¾	90	90	S-S	1	Mp	TL	TT	TT	2
3	8, 70	No	Dynaflow	TC	None				3.60	None	1.82	If	1.82		None	H-P	H-P		22	Own	Own	Sag	1	Mp	TL	TT	TT	3
4	Cadillac V8, 61	Yes	Hydra-Matic*	Hyd	None				3.77	None	2.39	1.53	2.39	Yes	Hel	Hel	Hel	Yes	3¾	90	90	Mec	2	Nb	Gp	Spr	Spr	4
5	V8, 62, 60	No	Hydra-Matic	Hyd	None				3.36	None	3.82	2.63	4.30						24	Own	Own	Mec	2	Nb	Gp	Spr	Spr	5
6	V8, 75	Yes	Hydra-Matic*	Hyd	None				4.27	None	2.39	1.53	2.39	Yes	Hel	Hel	Hel	Yes	3¾	90	90	Mec	3	Nb	Gp	Spr	Spr	6
7	Chevrolet 6, HJ, HK	Yes	Powerglide*	TC	None				4.11	None	2.94	1.68	2.94	Yes	Hel	Hel	Hel	Yes	1½	90	90	Own	1	Mp	TL	Spr	TT	7
8	Chrysler 6, C-48 Royal	Yes	Presto-matic*	Hyd	None				3.90	None	2.57	1.83	3.48	Yes	Hel	Hel	Hel	Yes	2¾	80	80	UP	2	Mta	Gr	Spr	Spr	8
9	6, C-48 Windsor	No	Presto-matic	Hyd	None				3.73	None	3.57	2.04	3.99	Yes	Hel	Hel	Hel	Yes	3	10W	10W	UP	2	Mta	Gr	Spr	Spr	9
10	8, C-49	No	Presto-matic	Hyd	None				3.54	None	3.57	2.04	3.99	Yes	Hel	Hel	Hel	Yes	3	10W	10W	UP	2	Mta	Gr	Spr	Spr	10
11	8, C-50	No	Presto-matic	Hyd	None				3.58	None	3.57	2.04	3.99	Yes	Hel	Hel	Hel	Yes	3	10W	10W	UP	3	Mta	Gr	Spr	Spr	11
12	Crosley 4, CD	Yes	None		None				5.17	None	3.29	1.72	3.29	No	Spur	Spur	Spur	No	1	90	90	NEA	1	Mp	Gr	TT	TT	12
13	De Soto 6, S-14 Deluxe	Yes	Tip-Toe Shift*	Hyd	None				3.90	None	2.57	1.83	3.48	Yes	Hel	Hel	Hel	Yes	2¾	80	80	UP	2	Mta	Gr	Spr	Spr	13
14	6, S-14 Custom	No	Tip-Toe Shift	Hyd	None				3.90	None	3.57	2.04	3.99	Yes	Hel	Hel	Hel	Yes	3	10W	10W	Mec	2	Mta	Gr	Spr	Spr	14
15	Dodge 6, D-33	Yes	None		None				3.90	None	2.57	1.83	3.48	Yes	Hel	Hel	Hel	Yes	2¾	80	80	UP	2	Mta	Gr	Spr	Spr	15
16	6, D-34	Yes	Gyromatic*	Hyd	None				3.90	None	2.57	1.83	3.48	Yes	Hel	Hel	Hel	Yes	2¾	80	80	UP	2	Mta	Gr	Spr	Spr	16
17	Ford 6, OHA	Yes	(a)	TC	*	4½	80	80	3.73	.70*	2.82	1.60	3.62	Yes	Hel	Hel	Hel	Yes	4	80	80		2	Nb	Gr	Spr	Spr	17
18	V8, OBA	Yes	(a)	TC	*	4½	80	80	3.73	.70*	2.82	1.60	3.62	Yes	Hel	Hel	Hel	Yes	4	80	80		2	Nb	Gr	Spr	Spr	18
19	Frazer 6, 1951	Yes	None		WG*	1	90	80	4.09	.70*	2.57	1.55	3.49	Yes	Hel	Hel	Hel	Yes	2½	90	80	UP	3			Spr	Spr	19
20	Hudson 6, 500	Yes	Super-Matic*	E-Vac	WG*	1½	90EP	80EP	4.10	.70*	2.88	1.82	3.50	Yes	Hel	Hel	Hel	Yes	2	90EP	80EP	Spi	3	Nb	Gr	Spr	Spr	20
21	6, 501, 502	Yes	Super-Matic*	E-Vac	WG*	1½	90EP	80EP	4.10	.70*	2.88	1.82	3.50	Yes	Hel	Hel	Hel	Yes	2	90EP	80EP	Spi	3	Nb	Gr	Spr	Spr	21
22	8, 503, 504	Yes	Super-Matic*	E-Vac	WG*	1½	90EP	80EP	4.10	.70*	2.88	1.82	3.50	Yes	Hel	Hel	Hel	Yes	2	90EP	80EP	Spi	3	Nb	Gr	Spr	Spr	22
23	Kaiser 6, 491, 492	Yes	None		None				4.09	None	2.57	1.55	3.49	Yes	Hel	Hel	Hel	Yes	3	90	80	UP	3			Spr	Spr	23
24	Lincoln V8, OEL, OEH	Yes	Hydra-Matic*	Hyd	WG*		80	80	3.91	.72*	2.53	1.52	3.16	Yes	Hel	Hel	Hel	Yes	3½	80	80	Spi	2	Nb	Gr	Spr	Spr	24
25	Mercury V8, OCM	Yes	(a)	TC	WG*		80	80	3.91	.70*	2.82	1.60	3.62	Yes	Hel	Hel	Hel	Yes	3½	80	80	Mec	2	Nb	Gr	Spr	Spr	25
26	Nash 6, 5040	Yes	None		WG*	1¼	90	80	4.38	.70*	2.57	1.62	3.48	Yes	Hel	Hel	Hel	Yes	2¼	90	80	M-S	1	Mta	PL	TT	TT	26
27	6, 5060	Yes	Hydra-Matic*	Hyd	WG*	1¼	90	80	4.10	.70*	2.57	1.55	3.49	Yes	Hel	Hel	Hel	Yes	2¼	90	80	M-S	1	Mta	PL	TT	TT	27
28	Oldsmobile 6, 76	Yes	Hydra-Matic*	Hyd	None				4.10	None	2.67	1.66	3.02	Yes	Hel	Hel	Hel	Yes	2	90	90	M-S	2		PL	SA	SA	28
29	V8, 88, 98	Yes	Hydra-Matic*	Hyd	None				3.64	None	2.39	1.53	2.39	Yes	Hel	Hel	Hel	Yes	3	90	90	M-S	2		PL	SA	SA	29
30	Packard 8-2301, Super 8-2302-32	Yes	Ultramatic*	TC	*	1¼	90	90	3.90	.72*	2.43	1.53	3.17	Yes	Hel	Hel	Hel	Yes	2	90	90	Mec	2	Rb	Gr	Spr	Spr	30
31	Custom 8-2306-33	No	Ultramatic	TC	None				3.54	None		If							24	Own	Own	Mec	2	Rb	Gr	Spr	Spr	31
32	Plymouth 6, P-19	Yes	None		None				3.73	None	2.57	1.83	3.48	Yes	Hel	Hel	Hel	Yes	2¾	80	80	UP	2		Gr	Spr	Spr	32
33	6, P-20	Yes	None		None				3.90	None	2.57	1.83	3.48	Yes	Hel	Hel	Hel	Yes	2¾	80	80	UP	2		Gr	Spr	Spr	33
34	Pontiac 6, 1950-25	Yes	Hydra-Matic*	Hyd	None				4.10	None	2.67	1.66	3.02	Yes	Hel	Hel	Hel	Yes	1¾	90	90	M-S	2	Mta	Gr	Spr	Spr	34
35	8, 1950-27	Yes	Hydra-Matic*	Hyd	None				3.90	None	2.67	1.66	3.02	Yes	Hel	Hel	Hel	Yes	1¾	90	90	M-S	2	Mta	Gr	Spr	Spr	35
36	Studebaker 6, 9G	Yes	None		WG*	¾	90	90	4.10	.70*	2.60	1.63	3.53	Yes	Hel	Hel	Hel	Yes	1½	90	90	Spi	3	Mta	Gr	Spr	Spr	36
37	6, 17A	Yes	(a)	TC	WG*	⅝	90	90	4.09	.70*	2.57	1.55	3.48	Yes	Hel	Hel	Hel	Yes	2⅝	90	90	Spi	3	Mta	Gr	Spr	Spr	37
38	Willys-Overland 4, 4-63	Yes	None		WG*	¾	90	80	5.38	.70*	2.61	1.63	3.54	Yes	Hel	Hel	Hel	Yes	1½	90	80	UP	2	Mta	Gr	Spr	Spr	38
39	6, 6-63	Yes	None		WG*	¾	90	80	5.38	.70*	2.61	1.63	3.54	Yes	Hel	Hel	Hel	Yes	1½	90	80	UP	2	Mta	Gr	Spr	Spr	39

ABBREVIATIONS

*—At extra cost.
(a)—Automatic transmissions will be offered during 1950 at extra cost, but no trade names have been announced.

E-Vac—Electric and vacumatic.
Gp—Grease-prepacked.
Gr—Grease.
Hel—Helical.
H-P—Helical-planetary.
Hyd—Hydraulic shifting mechanism.
If—Infinitely variable.

Mec—Mechanics Universal Joint Div.
Mp—Metal with plain bearing.
M-S—Mechanics or Saginaw.
Mta—Metal with anti-friction bearing.
Nb—Needle bearing.
NEA—New England Auto Products.
PL—Permanently lubricated.

Rb—Roller bearing.
SA—Stabilizing arms.
Sag—Saginaw Steering Gear Div.
Spi—Spicer Mfg. Div.
Spr—Springs.
S-S—Saginaw or Spicer.
TC—Torque converter.

TL—Transmission lubricant.
TT—Torque tube.
UP—Universal Products.
WG—Warner Gear Div.

For Directory of the Manufacturers listed above, see page 63.

1950 PASSENGER CARS

STEERING AND BRAKES

Line Number	Passenger Car Make and Model	Steering: Gear Type	Gear Make	Gear Ratio (to 1)	Drag Link-Type	No. of Tie Rods	Intermediate Arm	Car Turning Radius Right (Ft.)	Caster (Deg.)	Camber (Deg.)	Toe-in (In.)	Kingpin Inclination (Deg.)	Foot Brakes: Make	Type	Type Lining: Primary Shoe	Secondary Shoe	Drums: Material	Drums: Diameter (In.)	Lining: Length per Wheel (In.)	Lining: Width (In.)	Lining: Thickness (In.)	Clearance: Toe	Clearance: Heel	Total Foot Braking Area (Sq. In.)	Per Cent Braking on Rear Wheels	Hand Brakes: Operates	Internal or External	Drum Diameter (In.)	Lining: Length per Drum (In.)	Lining: Width (In.)	Lining: Thickness (In.)	Clearance (In.)	Line Number
1	Buick 8, 40	BW	Sag	19.8	No	2	No	19.75	¼P to 1½P	⅞P to ⅝P	1/16 to ⅛	4¼°*	B-D	H	Mo	Mo	CI	12	23 1/16	1¾	3/16	.015	.015	161.5	47.0	RS							1
2	8, 50	BW	Sag	19.8	No	2	No	19.75	¼P to 1½P	⅞P to ⅝P	1/16 to ⅛	4¼°*	B-D	H	Mo	Mo	CI	12	23 1/16	1¾	3/16	.015	.015	161.5	47.0	RS							2
3	8, 70	BW	Sag	23.6	No	2	No	20.90	¼P to 1½P	⅞P to ⅝N	1/16 to ⅛	4¼°*	B-D	H	Mo	Mo	CI	12	23 1/16	2¼	3/16	.015	.015	207.5	47.0	RS							3
4	Cadillac V8, 61, 62, 60	RB	Sag	21.3	Tra	2	No	22.50	½N to ½P	⅜N to ⅜P	1/32 to 3/32	5°51′ at 0	Ben	H	Mo	Mo	Com	11	22.45	2½	3/16	.008	.008	224.5	44.2	RS							4
5	V8, 75	RB	Sag	21.3	Tra	2	No	25.50	½N to ½P	⅜N to ⅜P	1/32 to 3/32	5°51′ at 0	Ben	H	Mo	Mo	Com	12	25.84	2½	3/16	.008	.008	258.5	44.2	RS							5
6	Chevrolet 6, HJ, HK	WR	Sag	17.4	Lg	2	Y	19.25	½ ± ½	½ ± ½	0 to ⅛	4 ± ½	Own	H	Mo	Mo	(e)	11	20⅝	1¾	3/16	(f)	(f)	180.0	42.3	RS							6
7	Chrysler 6, C-48 Royal	WR		18.2	Lg	2	Y		1N to 3N	0 to ¾P	0 to 1/16	4¾ to 6		H	Mo	Mo	Cen	12	25⅛	2	11/64	.006	.006	201.1	40.0	TP	Ext	6	13⅝	2	3/16	.017	7
8	6, C-48 Windsor	WR		18.2	Lg	2	Y		1N to 3N	0 to ¾P	0 to 1/16	4¾ to 6		H	Mo	Mo	Cen	12	25⅛	2	11/64	.006	.006	201.1	40.0	TP	Int	7	13⅛	2	3/16	(w)	8
9	8, C-49	WR		20.4	Lg	2	Y		1N to 3N	0 to ¾P	0 to 1/16	6¼ to 7½		H	Mo	Mo	Cen	12	25⅛	2	11/64	.006	.006	201.1	40.0	TP	Int	7	13⅛	2	3/16	(w)	9
10	8, C-50	WR		20.4	Lg	2	Y		1N to 3N	0 to ¾P	0 to 1/16	6¼ to 7½		H	Mo	Mo	CI	12	(x)	(x)	.170	SA	SA	290.0		TP	Int	7	13⅛	2	3/16	(w)	10
11	Crosley 4, CD	CL	Ross	17.5	Lg	1	No	15.00	7½	2	3/64 to 1/16	6½	GH	H	Mo	Mo	CI	7½	(Y)	(Y)	⅜			9.8	40.0	RS							11
12	De Soto 6, S-14 Deluxe	WR		18.2	Lg	2	Y		1N to 3N	0 to ¾P	0 to 1/16	4¾ to 6	Crl	H	Mo	Mo	CI	12	25⅛	2	11/64	.006	.006	201.1	40.0	TP	Ext	6	15⅝	2	3/16	.017	12
13	6, S-14 Custom	WR		18.2	Lg	2	Y		1N to 3N	0 to ¾P	0 to 1/16	4¾ to 6	Crl	H	Mo	Mo	CI	12	25⅛	2	11/64	.006	.006	201.1	40.0	TP	Int	7	13⅛	2	3/16	(w)	13
14	Dodge 6, D-33	WR		18.2	No	2	N		1N to 1P	0 to ¾P	0 to 1/16	4¾ to 6		H	Mo	Mo	CI	10	(a)	2	11/64	.006	.006	158.0	40.0	TP	Ext	6	15⅝	2	3/16	.017	14
15	6, D-34	WR		18.2	No	2	N		1N to 1P	0 to ¾P	0 to 1/16	4¾ to 6		H	Mo	Mo	CI	11	(g)	2	11/64	.006	.006	173.5	40.0	TP	Ext	6	15⅝	2	3/16	.017	15
16	Ford 6, OHA	WR	Own	17.7	Tra	2	Y	20.50	½P to 1N	0 to 1P	1/16 to ⅛	5¼		H	Mo	Mo	CI	10	22	(i)	.187	.010	.010	176.0	38.0	RS							16
17	V8, OBA	WR	Own	17.7	Tra	2	Y	20.50	½P to 1N	0 to 1P	1/16 to ⅛	5¼		H	Mo	Mo	CI	10	22	(i)	.187	.010	.010	176.0	38.0	RS							17
18	Frazer 6, 1951	WR	Own	18.2	Tra	2	Y	20.00	1N to 1P	0 to ¾N	0 to 1/16	4¾ to 5¾	Ben	H	Mo	Mo	Cen	11	22	2	11/64	.010		152.0	44.5	RS							18
19	Hudson 6, 500	WR	Gem	18.2	Lg	2	Y	19.65	½P to 1½P	½P to 1½P	0 to 1/16	3°38′	Ben	D	Mo	Mo	Cen	11	20.11	1¾	.177	.010	.010	140.4		RS							19
20	6, 501, 502	WR	Gem	20.4	Lg	2	Y	21.17	½P to 1½P	½P to 1½P	0 to 1/16	3°38′	Ben	D	Mo	Mo	Cen	11	(b)	(i)	.177	.010	.010	158.7		RS							20
21	8, 503, 504	WR	Gem	20.4	Lg	2	Y	21.17	½P to 1½P	½P to 1½P	0 to 1/16	3°38′	Ben	D	Mo	Mo	Cen	11	(b)	(i)	.177	.010	.010	158.7		RS							21
22	Kaiser 6, 491, 492	WR	Own	18.2	Tra	2	Y	20.00	1N to 1P	0 to ¾N	0 to 1/16	4¾ to 5¾	Ben	H	Mo	Mo	Cen	11	22	2	11/64	.010		152.0	44.5	RS							22
23	Lincoln V8, OEL	WR	Gem	22.3	Tra	2	Y	21.90	0 to 1½N	0 to ¾P	1/32 to 3/32	5 at ¾	Ben	H	Mo	Mo	CI	12	23.11	(k)	.212	.010	.010	186.4	41.0	RS							23
24	V8, OEH	WR	Gem	20.4†	Tra	2	Y	22.40	0 to 1½N	0 to ¾P	1/32 to 3/32	5 at ¾	Ben	H	Mo	Mo	CI	12	23.11	(k)	.212	.010	.010	186.4	41.0	RS							24
25	Mercury V8, OCM	WR	Gem	18.2	Tra	2	Y	21.50	0 to 1½N	0 to ¾P	1/32 to 3/32	5 at ¾	Ben	H	Mo	Mo	Com	11	21.21	(c)	.212	.010	.010	159.1	44.0	RS							25
26	Nash 6, 5040	WR	Gem	18.2	Tra	2	Y	21.17	0 to ½P	¼N to ¼P	1/16 to 3/16	8½	Ben	H	Mo	Mo	CI	9	17½	(n)	3/16	.015	.015	132.0	43.4	RS							26
27	6, 5060	WR	Gem	18.2	Tra	2	Y	21.17	0 to ½P	¼N to ¼P	1/16 to 3/16	8½	Ben	H	Mo	Mo	CI	10	20	2	3/16	.015	.015	160	43.7	RS							27
28	Oldsmobile 6, 76	WR	Sag	19.0	Tra	2	No	20.00	0 to ¾N	¼N to ¾P	1/16 to ⅛	4°29′47″	Var	H	Mo	Mo	CI	11	(d)	(c)	.226	.015	.015	159.8	44.0	RS							28
29	V8, 88, 98	WR	Sag	19.0	Tra	2	No	20.00	0 to ¾N	¼N to ¾P	1/16 to ⅛	4°29′47″	Var	H	Mo	Mo	CI	11	21 1/16	(t)	.226	.015	.015	191.7	42.0	RS							29
30	Packard 8-2301	WR	Gem	26.2				22.00	1½N to ½N	¼N to ¼P	0 to 1/16	5°50′		H			Cen	12	24½	1¾	3/16			171.5		RS							30
31	Super 8-2302-32	WR	Gem	26.2				22.50	1½N to ½N	¼N to ¼P	0 to 1/16	5°50′		H			Cen	12	24½	1¾	3/16			171.5		RS							31
32	Custom 8-2306-33	WR	Gem	26.2				22.50	1½N to ½N	¼N to ¼P	0 to 1/16	5°50′		H			Cen	12	24½	(k)	3/16			206.2		RS							32
33	Plymouth 6, P-19, P-20	WR		18.2	No	2	No		1N to 1P	0 to ¾P	0 to 1/16	4¾ to 6	Crl	H	Wo	Wo	Cen	10	(n)	2	11/64	.006	.006	158.0	40.0	TP	Ext	6	18⅝	2	3/16	.017	33
34	Pontiac 6, 1950-25	WR	Sag	19.0	Tra	2	Y	19.58	¾N	0	0 to 1/16	5½		H	Mo	Mo	CIS	11	21 1/16	(i)	3/16			171.0	40.0	RS							34
35	8, 1950-27	WR	Sag	19.0	Tra	2	Y	19.58	¾N	0	0 to 1/16	5½		H	Mo	Mo	CIS	11	21 1/16	(i)	3/16			171.0	40.0	RS							35
36	Studebaker 6, 9G	CL	Ross	15.4	No	3	Y	20.33	0 to 1N	0 to 1P	1/16 to ⅛	5¼	WE	H	Mo	Mo	Com	9	18½	2	3/16	SC	SC	148.0	43.0	RS							36
37	6, 17A	CL	Ross	17.0	Lg	2	Y	20.58	1½N to 2½N	0 to 1P	1/16 to ⅛	5¼	WE	H	Mo	Mo	Com	11	22¼	2	3/16	SC	SC	178.0	43.0	RS							37
38	Willys-Overland 4, 4-63	CL	Ross	14.0	Tra	2	No	17.50	1P	1½P	1/16 to ⅛	5½	Ben	H	Mo	Mo	CN	9.9	19	1¾	.187			133.8		RS							38
39	6, 6-63	CL	Ross	14.0	Tra	2	No	17.50	1P	1½P	1/16 to ⅛	5	Ben	H	Mo	Mo	CN	10	19	1¾	.187			133.8		RS							39

ABBREVIATIONS

*—At ⅜° camber.
†—Early models will use 22.3.
(a)—Front 21 in., rear 18½ in.
(b)—Front 21.32 in., rear 20.11 in.
(c)—Front 2 in., rear 1¾ in.
(d)—Front 21 1/16 in., rear 24 in.
(e)—Cast iron with steel web.
(f)—Adjust to slight drag, back off 4 notches.
(g)—Front 23 in., rear 20⅝ in.
(i)—Front 2¼ in., rear 1¾ in.
(k)—Front 2¼ in., rear 2 in.
(n)—Front 21 in., rear 18½ in.
(r)—Forward shoe 2 in., reverse 1¾ in.
(t)—Front 2½ in., rear 2 in.
(w)—Tighten until shoes are firm against drum; back off 1 notch.
(x)—Dish brake 12 segments.
(y)—Dish type brake with 2 buttons of 1¼ in. diameter per wheel.
B-D—Bendix or Delco.
Ben—Bendix Products Div.
BW—Ballbearing, worm, and nut.
Cen—Centrifuse.
CI—Cast iron.
CIS—Cast iron and steel.
CL—Cam and lever.
CN—Chrome-nickel.
Com—Composite.
Crl—Chrysler Lockheed.
D—Duo Automatic
Ext—External contracting.
Gem—Gemmer Mfg. Co.
GH—Goodyear-Hawley.
H—Hydraulic.
Int—Internal expanding.
Lg—Longitudinal.
Mo—Moulded.
N—Negative.
No—No or none.
P—Positive.
Ross—Ross Gear and Tool Co.
RB—Recirculating ball.
RS—Rear service brakes.
SA—Self adjusting.
Sag—Saginaw Steering Gear Div.
SC—Self centering.
Tra—Transverse.
TP—Operates on transmission and propeller shaft.
Var—Various.
WE—Wagner Electric Corp.
Wo—Woven.
WR—Worm and roller.
Y—Yes.

For Directory of the Manufacturers listed above, see page 63.

1950 PASSENGER CARS

REAR AXLES, TIRES AND FRAMES

REAR AXLE

Line Number	Passenger Car Make and Model	Make	Type	Min. Road Clearance (In.)	Lubrication: Capacity (Pts.)	Lubrication Grade: Summer	Lubrication Grade: Winter	Gearing: Type	Gearing Ratios: Standard	Gearing Ratios: Optional	No. of Teeth: Ring	No. of Teeth: Pinion	Pinion Adjustment
1	Buick 8, 40	Own	SF	7.76	4	90 Hyp*	90 Hyp*	Hyp	4.10	3.90	41	10	Shim
2	8, 50	Own	SF	7.76	4	90 Hyp*	90 Hyp*	Hyp	3.90	3.60	43	11	Shim
3	8, 70	Own	SF	8.26	4	90 Hyp*	90 Hyp*	Hyp	3.60	3.90	47	13	Shim
4	Cadillac V8, 61	Own	SF	8.34	5	90 Hyp	90 Hyp	Hyp	3.77	3.36	49	13	None
5	V8, 62, 60	Own	SF	8.34	5	90 Hyp	90 Hyp	Hyp	3.36		47	14	None
6	V8, 75	Own	SF	8.44	5	90 Hyp	90 Hyp	Hyp	4.27	3.77	47	11	None
7	Chevrolet 6, HJ, HK	Own	SF	8.06	3 1/2	90 Hyp	90 Hyp	Hyp	4.11	None	37	9	Shim
8	Chrysler 6, C-48 Royal		SF	8.38	3 1/4	90	90	Hyp	3.90	3.73	39	10	Shim
9	6, C-48 Windsor		SF	8.38	3 1/4	90	90	Hyp	3.73	3.90	41	11	Shim
10	8, C-49		SF	8.62	3 1/2	90	90	Hyp	3.54		39	11	Shim
11	8, C-50		SF	9.00	5	90	90	Hyp	3.58		43	12	Shim
12	Crosley 4, CD	Spi	SF	8.50	1 1/2	90	90	SB	5.17		31	6	Shim
13	De Soto 6, S-14		SF	8.25	3 1/4	90	90	Hyp	3.90	3.73‡	39	10	Shim
14	Dodge 6, D-33		SF	8.00	3 1/4	90	90	Hyp	3.90		39	10	Shim
15	6, D-34		SF	8.12	3 1/4	90	90	Hyp	3.90		39	10	Shim
16	Ford 6, OHA	Own	SF	8.20	3 1/2	90	90	Hyp	3.73	4.10	41	11	Shim
17	V8, OBA	Own	SF	8.20	3 1/2	90	90	Hyp	3.73	4.10	41	11	Shim
18	Frazer 6, 1951	Spi	SF	7.81	3	90	90	Hyp	4.09	3.91	45	11	Shim
19	Hudson 6, 500	Own	SF	8.12	4 1/4	90 Hyp	90 Hyp	Hyp	4.10	4.55	41	10	Shim
20	6, 501, 502	Own	SF	8.12	4 1/4	90 Hyp	90 Hyp	Hyp	4.10	4.55	41	10	Shim
21	8, 503, 504	Own	SF	8.12	4 1/4	90 Hyp	90 Hyp	Hyp	4.10	4.55	41	10	Shim
22	Kaiser 6, 491, 492	Spi	SF	7.81	3	90	90	Hyp	4.09	3.91	45	11	Shim
23	Lincoln V8, OEL	Spi	SF	8.25	4	90	90	Hyp	3.91	4.27	43	11	Shim
24	V8, OEH	Spi	SF	8.25	4	90	90	Hyp	3.91	4.27	43	11	Shim
25	Mercury V8, OCM	Spi	SF	7.80	3	90	90	Hyp	3.91	4.27	43	11	Shim
26	Nash 6, 5040	Own	SF	7.75	3	90 Hyp	80 Hyp	Hyp	4.38	4.88	35	8	Shim
27	6, 5060			8.00	4	90 Hyp	80 Hyp	Hyp	4.10	4.44	41	10	Shim
28	Oldsmobile 6, 76	Own	SF	8.12	3 3/4			Hyp	4.10	4.30	41	10	Shim
29	V8, 88	Own	SF		3 3/4			Hyp	3.64	3.90	40	11	Shim
30	V8, 98	Own	SF		3 3/4			Hyp	3.90	None	39	10	Shim
31	Packard 8-2301, Super 8-2302-32	Own	SF		4	90 Hyp	90 Hyp	Hyp	3.90		39	10	
32	Custom 8-2306-33	Own	SF		6	90 Hyp	90 Hyp	Hyp	3.54		39	11	
33	Plymouth 6, P-19	Own	SF	7.50	3 1/4	90	90	Hyp	3.73		41	11	Shim
34	6, P-20	Own	SF	8.00	3 1/4	90	90	Hyp	3.90		39	10	Shim
35	Pontiac 8, 1950-25	Own	SF	7.69	3 1/4	90 Hyp	90 Hyp	Hyp	4.10	3.63	41	10	Shim
36	8, 1950-27	Own	SF	7.69	3 1/4	90 Hyp	90 Hyp	Hyp	3.90	3.63	39	10	Shim
37	Studebaker 6, 9G	Spi	SF	8.00	2 1/2	90 Hyp	90 Hyp	Hyp	4.10	4.56	41	10	Shim
38	6, 17A	Spi	SF	8.19	3	90 Hyp	90 Hyp	Hyp	4.09	4.55	45	11	Shim
39	Willys-Overland 4, 4-63	Spi	SF	8.38	2	90	90	Hyp	5.38		43	8	Shim
40	6, 6-63	Spi	SF	8.38	2	90	90	Hyp	5.38		43	8	Shim

REAR AXLE (continued), TIRES, RIM, FRAME DIMENSIONS (In.)

Line Number	Pinion Bearing Adjustment	Pinion Bearing in Sleeve	Back Lash (Average In.)	Tires: Make*	Tires: Size	Tires: Number of Plies	Inflation Pressure (psi.) Cold: Front	Inflation Pressure (psi.) Cold: Rear	Rim: Diameter (In.)	Rim: Width (In.)	Frame: Depth (Maximum)	Frame: Thickness (Maximum)	Frame: Flange Width (Maximum)	Line Number
1	None	No	.008	U.S., Fire, Go	7.60/15	4	24	24	15	6.00	5 9/16	7/64	2 1/4	1
2	None	No	.008	U.S., Fire, Go	7.60/15	4	24	24	15	6.50	5 9/16	7/64	2 1/4	2
3	None	No	.008	U.S., Fire, Go	8.00/15	4	24	24	15	6.50	5 9/16	5/32	2 1/4	3
4	None	No	.007	U.S., Fire, Go	8.00/15	4	24	24	15	6.00				4
5	None	No	.007	U.S., Fire, Go	8.00/15	4	24	24	15	6.00				5
6	None	No	.007	U.S., Fire, Go	8.20/15	6	28	28	15	6.00				6
7	None	No	.007	U.S., Fire, Go	6.70/15	4	24	24	15	5.00	4 11/64	1/8	3 7/8	7
8	Shim	No	.008	Gy	7.60/15	4	24	24	15	5.50	6	5/32	3 [illegible]	8
9	Shim	No	.008	Gy	7.60/15	4	24	24	15	5.50	6	5/32	3 [illegible]	9
10	Shim	No	.008	Gy	8.20/15	4	24	24	15	6.00	6 1/2	1/8	3 [illegible]	10
11	Shim	No	.008	Gy	8.90/15	6	24	24	15	6.50	6 9/16	5/32	3 [illegible]	11
12	Shim	No	.006	Fire, Gy	4.50/12	4	25	25	12	3.00	3	1/8	1 1/4	12
13	Shim	No	.008	Gy	7.60/15	4	24	24	15	5.50	6	5/32	3 [illegible]	13
14	Shim	No	.008	Gy	6.70/15	4	24	24	15	4.50	6	5/32	3 [illegible]	14
15	Shim	No	.008	Gy	7.10/15	4	24	24	15	5.00	6	5/32	3 [illegible]	15
16	Cs	No	.007	Various	6.00/16	4	28	25	16	4.50	4	.105	3 3/4 ♦	16
17	Cs	No	.007	Various	6.00/16	4	28	25	16	4.50	4	.105	3 3/4 ♦	17
18	Shim	No	.004	Gy	7.10/15	4	24	24	15	5.00	6 1/8	1/8	♦	18
19	Shim	No	.005	Gy	7.10/15	4	26	24	15	5.00				19
20	Shim	No	.005	Gy	7.10/15	4	26	24	15	5.00				20
21	Shim	No	.005	Gy	7.10/15	4	26	24	15	5.00				21
22	Shim	No	.004	Gy	7.10/15	4	24	24	15	5.00	6 1/8	1/8	♦	22
23	Shim	No	.006	Gy	8.00/15	4	26	24	15	6.00	5 1/2	.105	2	23
24	Shim	No	.006	Gy	8.20/15	4	26	24	15	6.00	5 1/2	.105	2	24
25	Shim	No	.006	Fire, Go, Gy	7.10/15	4	24	24	15	5.50	5 1/2	.105	2	25
26	Shim	No	.005	Gy	6.40/15	4	24	24	15	4.50	Int			26
27	Shim	No	.005	Gy	7.10/15	4	24	24	15	5.00	Int			27
28	Nut	No	.005	Various	7.10/15	4	24	24	15	5.50	6 3/16	.120	2 1/4	28
29	Nut	No	.006	Various	7.60/15	4	24	24	15	5.50	6 3/16	.120	2 1/4	29
30	Nut	No	.005	Various	7.60/15	4	24	24	15	5.50	5 3/4	.135	3 1/8	30
31			.004		(a)	4	24	24	15			1/8		31
32			.004		8.20/15	4	24	24	15			9/64		32
33	Shim	No	.008	Gy	6.40/15	4	24	24	15	4.50	6	5/32	3 11/32	33
34	Shim	No	.008	Gy	6.70/15	4	24	24	15	4.50	6	5/32	3 11/32	34
35	Screw	No	.008	Various	7.10/15	4	24	24	15	5.50	6 5/16	7/64	2 5/8	35
36	Screw	No	.008	Various	7.10/15	4	24	24	15	5.50	6 5/16	7/64	2 5/8	36
37	Shim	No	.004	Fire, Go	6.40/15	4	26	24	15	5.00	3 15/16	5/32	4	37
38	Shim	No	.004	Fire, Go	7.60/15	4	24	20	15	6.00	4 9/16	1/8	4	38
39	Shim	No	.006	Go, Gy	6.70/15	4	20	24	15	4.50	5	3/16	3 3/4	39
40	Shim	No	.006	Go, Gy	6.70/15	4	20	24	15	4.50	5	3/16	3 3/4	40

ABBREVIATIONS

*—Seasonal changes are not recommended.
‡—Optional on Custom only.
♦—Box type frame.
(a)—All models except 2332, 7.60/15; 2332, 8.20/15.
Cs—Collapsible spacer.
Fire—Firestone Tire and Rubber Co.
Go—B. F. Goodrich Co.
Gy—Goodyear Tire Co.
Hyp—Hypoid.
Int—Integral with body.
No—No or none.
SB—Spiral bevel.
SF—Semi-floating.
Spi—Spicer.
US—United States Rubber Co.

For Directory of the Manufacturers listed above, see page 63.

TRUCK SPECIFICATIONS

OF CURRENT PRODUCTION MODELS

DATA SUPPLIED BY MANUFACTURERS AND TABULATED BY

AUTOMOTIVE INDUSTRIES

KEY TO DEFINITIONS AND REFERENCES

DEFINITIONS

MAKE AND MODEL

Only Domestic Truck Models are listed.

OPTIONAL UNITS

For the express purpose of best fitting the truck to the individual job most of the models listed can be provided with optional engines, transmissions, axles, etc., and these models when so equipped are considered standard stock models.

CHASSIS LIST PRICE

The chassis list price applies to the minimum standard wheelbase with standard tires and standard equipment. All prices are F.O.B. factory. Chassis list price does not include the price of the Cab unless otherwise noted.

RECOMMENDED GROSS VEHICLE WEIGHT FOR NORMAL SERVICE

The Gross Weights published herewith are those supplied by manufacturers as their Recommended Gross Vehicle Weights for Normal Operating Conditions, and are based upon the Maximum Authorized Tire Size listed. In actual practice the manufacturer may either increase or decrease the gross vehicle weight rating when either favorable or unfavorable operating conditions are involved. Since the proper performance of a motor truck depends upon many factors, including grades, road conditions, etc., the gross weights that a manufacturer is prepared to recommend will vary with particular conditions, and the manufacturer's own standard of safety factors. Specific recommendations, therefore, should be obtained from the manufacturer's representative.

CHASSIS WEIGHT

The chassis weight listed includes the weight of the minimum standard wheelbase chassis, with cowl, with standard tires, with standard equipment, with crankcase and cooling system full, and 5 gallons of fuel in the tank. It does not include the weight of the Cab. This applies to C.O.E. as well as conventional chassis types. Exceptions are noted.

STANDARD TIRE SIZE

The standard tire size listed is that which is included in the Chassis List Price.

MAXIMUM AUTHORIZED TIRE SIZE

The tire size listed in this column is the maximum size recommended by the manufacturer of the chassis for the Gross Vehicle Weight for Normal Operating Conditions. It is furnished at extra cost, if it differs from the standard size. Dual rears are understood; exceptions noted.

MINIMUM STANDARD WHEELBASE

The minimum standard wheelbase is the so-called standard wheelbase on which the Chassis List Price is based.

MAXIMUM STANDARD WHEELBASE

The maximum standard wheelbase is the extreme end of the standard range of wheelbases offered by the chassis maker.

MAXIMUM BRAKE HP.

Maximum Brake Horsepower at Given R.P.M. is actual dynamometer reading without accessories.

GEAR RATIO RANGE

Gear Ratio Range in High—Ratios within the range given are available at no extra cost. Exceptions are noted.

TRACTORS

Unless given the designation (N)—meaning not available as a tractor—all standard models may be assumed to be available as tractors. Exclusively Tractor models are designated (T).

KEY TO REFERENCES

c.f.—Cab Forward design.
c.o.e.—Cab-Over-Engine design.
(D)—Diesel-engine equipped.
(T)—Designed for tractor use only.
(C)—Converted Ford or Chevrolet Model.

KEY TO ABBREVIATIONS

MAKES—ALL

B—Bendix
BL—Brown-Lipe.
Bu or Bud—Buda.
BW—Bendix-Westinghouse
C—Chevrolet.
Cl or Cla—Clark.
Con—Continental.
Cum—Cummins-Diesel.
Eat—Eaton.
F—Ford.
Fu—Fuller.
G-H—Goodyear-Hawley type.
H—Hotchkiss.
Her—Hercules.
HS—Hall-Scott.
L—Lockheed.
LH—Lockheed front, Wagner "hi-Tork" rear.
LT—Lockheed type front, Timken rear.
LW—Lockheed front, Wisconsin rear.
M—Midland.
N.P.—New Process.
O or Ow—Own.
Op or Opt—Optional
Shu—Shuler.
Spi—Spicer
T or Tim—Timken-Detroit Axle Co.
Tw—Timken-Detroit—Westinghouse.
TW—Timken-Detroit—Wisconsin.
WG—Warner Gear.
Wau—Waukesha.
W or Wis—Wisconsin.
Wg—Wagner "hi-Tork"
Ws—Westinghouse.
WW—Westinghouse or Wagner

WHEELS DRIVEN

2F—Forward unit of Rear Axle Group.
2R—Rear Unit of Rear Axle Group
4R—Forward and rear units of Rear Axle Group.
—All wheels.

BRAKES—SERVICE

Location

4—Four Wheels, front and rear.
4r—Four Wheels, rear only.

Type

I—Internal.
X—External.

Operation

A—Air.
H—Hydraulic.
V—Vacuum.
D or Dp—Dual Primary

BRAKES—HAND

Location

C—Center of double propeller shaft.
2—Rear wheels.
4—Four wheels.
6—Six wheels.
P—Back of Power Divider.
J—Jackshaft.
T—Transmission.
F—Driveshaft.

Type

D—Tru-Stop disk.
I—Internal.
M—Mechanical.
X—External.
PD—Two drums on rear of power divider.

BRAKE DRUMS

Material

a—Cast alloy iron.
A—American Car Foundry.
c—Cast iron.
Cc—Composite Front, Cast Iron in rear.
Ce—Centrifuse.
Cl—Copper iron.
Co—Composite.
D—Dayton.
E—Ermalite.
G—Gunite.
N—Nickel iron.
S—Steel.

(Where a combination of any of the above is used, the first reference mark applies to the front and the second to the rear drums.)

FRAME

Type

C—Channel.
T—Channel tapered front and rear.
L—Channel reinforced with liner.
B—Channel reinforced with both liner and fishplate.
P—Channel reinforced with plate.
TL—Channel tapered front and rear reinforced with liner.
D—Drop Center
Tf—Tapered front.
A—Straight section sidemembers, lined with oak inserts.
Z—Reinforced (X) member frame, box type sections.

REAR AXLE

Final Drive and Type

B—Bevel.
CD—Chain Drive
F—Full-floating.
H or Hy—Hypoid.
d—Dual range axle.
2—Double Reduction.
S—Spiral bevel.
W—Worm.
¾—Three Quarters Floating.
½—Semi-Floating
T—Torque Tube

GEAR RATIOS

(**) Only one ratio.

Drive and Torque

H—Hotchkiss (springs).
R—Radius Rods.
L—Parallel Torque Rods
T—Torque Arm.

GOVERNOR STANDARD

Y—Yes.
N—No.

CURRENT TRUCK SPECIFICATIONS

Line Number	Make and Model	Chassis List Price	Wheelbase: Minimum Standard	Wheelbase: Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	Tire Sizes (D-dual rear, S-single rear): Standard Front and Rear	Tire Sizes: Maximum Authorized Tire Size (Duals unless noted)	Engine: Make and Model	Engine: No. of Cylinders, Bore and Stroke	Engine: Displacement	Engine: Comp. Ratio	Engine: Torque lb. ft.	Engine: Max. Brake H.P. at R.P.M. Given	Main Bearings: Number Diameter and Length	Governor Standard	Transmission: Make and Model	Forward Speeds	Rear Axle: Make and Model	Rear Axle: Gear and Type	Rear Axle: Drive & Torque	Rear Axle: Gear Ratio Range in High	Front Axle: Make and Model	Brakes (Service): Make Location Type Operation	Brakes: Lining Area	Brakes: Drum Area	Brakes: Drum Material	Hand Location Type	C-A Dimensions (Min. Std. W. B.)	Frame: Side Rail Dimensions	Frame: Type
	Available																														
1	(c.o.e.) 200				15000	5500●	7.00/20D	8.25/20	Wau BM	6-3¾x4⅛	263	5.9	178	78-2800	7-2⅜x10⅛	N	WG T9	4	Tim E100DPH	HF	H	●● -6.20	Tim 32502H	L4IHV	314	534	a	TX		10x3x¼	T
2	(c.o.e.) 225				16500	6200●	7.50/20D	8.25/20	Wau BZ	6-4x4½	320	5.9	235	105-3200	7-2⅜x10⅛	N	WG T97	4	Tim E100DPH	HF	H	●● -6.20	Tim 32502H	L4IHV	314	534	a	TX		10x3x¼	T
3	(c.o.e.) 250				20000	6400●	8.25/20D	9.00/20	Wau BZ	6-4x4½	320	5.9	235	105-3200	7-2⅜x10⅛	N	Fu 5A330	5	Tim H100DPH	HF	R	●● -6.80	Tim 32502H	L4IHV	344	584	a	TX		10x3x¼	T
4	(c.o.e.) 400				22000	6800●	9.00/20D	10.00/20	Wau BZ	6-4x4½	320	5.9	235	105-3200	7-2⅜x10⅛	N	Fu 5A330	5	Tim L100DPH	HF	R	●● -6.83	Tim 35000H	L4IHV	370	642	a	TX		12x3x¼	T
5	(c.o.e.) 500				23000	7500●	9.00/20D	10.00/20	Wau MZA	6-4⅛x4¾	404	5.6	285	130-3000	7-2⅜x12½	Y	Fu 5F430	5	Tim L100DPH	HF	R	●● -6.83	Tim 35000H	L4IHV	370	642	a	TX		12x3x¼	T
6	(c.o.e.) 550				28000	8100●	10.00/20D	11.00/20	Wau MZA	6-4⅛x4¾	404	5.6	285	130-3000	7-2⅜x12½	Y	Fu 5F430	5	Tim Q100DPH	HF	R	●● -7.80	Tim 26452H	L4IHV	458	846	a	TX		12x3x¼	T
7	(c.o.e.) 550 X				32000	9600●	10.00/20D	11.00/24	Wau MZA	6-4⅛x4¾	404	5.6	285	130-3000	7-2⅜x12½	Y	Fu 5F430	5	Tim S200DPH	2F	R	●● -7.84	Tim 26452H	L4IHV	576	1054	a	FD		14x3x5/16	T
8	(c.o.e.) 600				28000	10000●	10.00/20D	11.00/24	Wau 140 GK	6-4½x5⅜	525	6.4	425	172-2600	7-3¼x13⅛	Y	Fu 5A650	5	Tim R100P	HF	R	●● -7.40	Tim 26452TW	L4IA	566	950	a	FD		14x3x5/16	T
9	(c.o.e.) 601				28000	10900●	10.00/20D	11.00/24	Wau 145 GK	6-5⅛x6	779	6.2	595	240-2400	7-3⅛x17¾	Y	Spl 7851	4	Tim R100P	HF	R	●● -7.40	Tim 26452TW	L4IA	566	950	a	FD		14x3x5/16	T
10	(D) (c.o.e.) 602				28000	11200●	10.00/20D	11.00/24	Cum HB600	6-4⅛x6	672	17	500	150-1800	7-4⅛x16⅛	Y	Spl 7851	4	Tim R100P	HF	R	●● -7.40	Tim 26452TW	L4IA	566	950	a	FD		14x3x5/16	T
11	Biederman NSH		130	190	21000	6070	8.25/20D	10.00/20	Her JXLD	6-4x4½	339	6.9	272	131-3200	7-2½x10 11/16	N	Fu 5A330	5	Tim H700DPH	SF	H	●● -7.2	Tim 35000HX	LH4IH	514	744	G	T	60	9x3x¼	C
12	NSD		130	190	21000	6070	8.25/20D	10.00/20	Her JXLD	6-4x4½	339	6.9	272	131-3200	7-2½x10 11/16	N	Fu 5A330	5	Tim H700DPH	2D	H	6.13-8.15	Tim 35000HX	LH4IH	514	744	G	T	60	9x3x¼	C
13	NSR		142	171	21000	7420	8.25/20D	10.00/20	Her JXLD	6-4x4½	339	6.9	272	131-3200	7-2½x10 11/16	N	Spl 3541UP	5	Tim H110DPH	HFd	H	●● -6.4	Tim 35141PX	T4A			G	T		9x3x¼	C
14	HL		93	197	30000	12200	10.00/24D	12.00/24	Wau 140 GK	6-4½x5⅜	525	6.4	425	172-2600	7-3¼x13 11/16	Y	Spl 6252A	5	Tim R200	HFd	H	6.41-8.37	Tim 36000TW	T4A			G	T	81	10x3x5/16	C
15	Brown R6572T		144	166	33000		11.00/22	12.00/24	Con R6572	6-4¾x5¾	572	5.9	440	172-2600	7-3¼x14½	Y	Spl 6252B	5	Tim R100	Hy	H	●● -5.28	Tim FE900	Ws4IA			a	2M	67	9⅞x3½x¼	Tf
16	140GKT		144	166	33000		11.00/22	12.00/24	Wau 140GK	6-4½x5⅜	525	6.4	425	168-2400	7-2⅞x13 11/16	Y	Spl 6252B	5	Tim R100	Hy	H	●● -5.28	Tim FE900	Ws4IA			a	2M	67	9⅞x3½x¼	Tf
17	(D) HB600T		144	166	33000		11.00/22	12.00/24	Cum HB600	6-4⅛x6	672	17	500	150-1800	7-4⅛x16⅛	Y	Fu 5A650	5	Tim R100	Hy	H	●● -5.28	Tim FE900	Ws4IA			a	2M	67	9⅞x3½x¼	Tf
18	(D) HRB600T		144	166	33000		11.00/22	12.00/24	Cum HRB600	6-5⅛x6	743	15	530	165-1800		Y	Fu 5A920	5	Tim R100	Hy	H	●● -5.28	Tim FE900	Ws4IA			a	2M	67	9⅞x3½x¼	Tf
19	(D) NHB600T		144	166	33000		11.00/22	12.00/24	Cum NHB600	6-5⅛x6	743	15	575	200-2100		Y	Fu 5A920	5	Tim S200	2F	H	●● -6.42	Tim FE900	Ws4IA			a	2M	67	9⅞x3½x¼	Tf
20	Chevrolet HP	905	116		4600	▾2570	6.00/16S	15S	O-Thrift Mas.	6-3½x3¾	216	6.6	176	92-3400	4-♦ ♦	N	Own	3	Own	Hy‡	T	●● -4.11	Own	O4IH	150	242	Co	2I	39	5¼x2¼x5/32	C
21	HR	1000	125		5800	▾2880	15S	7.50/17S	O-Thrift Mas.	6-3½x3¾	216	6.6	176	92-3400	4-♦ ♦	N	Own	3	Own	HyF	H	†† -4.57	Own	O4IH	176	272	Co	2I	48⅛	5 11/16x2¼x5/32	C
22	†Fwd. Control HT	1015	125		7000	▾2685	15S	7.50/17S	O-Load Mas.	6-3 9/16x3 15/16	235	6.7		92-3400	4-♦ ♦	N	Own	3	Own	HyF	H	●● -5.14	Own	O4IH	202	302	Co	2I		5 11/16x2¼x5/32	C
23	HS	1070	137		8800	▾3170	7.00/17S	7.00/18	O-Thrift Mas.	6-3½x3¾	216	6.6	176	92-3400	4-♦ ♦	N	Own	4	Own	HyF	H	●● -5.14	Own	O4IH	248	371	Co	2I	60	7x2¾x3/16	C
24	†Fwd. Control HU	1105	137	..	10000	▾2865	7.00/17S	7.00/18	O-Load Mas.	6-3 9/16x3 15/16	235	6.7		92-3400	4-♦ ♦	N	Own	4	Own	HyF	H	●● -5.14	Own	O4IH	248	371	Co	2I		7x2¾x3/16	C
25	TJ	1130	137		12500	▾3575	7.00/20S	7.50/20	O-Thrift Mas. ::	6-3½x3¾	216	6.6	176	92-3400	4-♦ ♦	N	Own	4	Own	HyF	H	○ -6.17	Own	O4IH	330	478	Co	2I	60	7x2¾x3/16	C
26	TK	1165	161		12500	▾3685	7.00/20S	7.50/20	O-Thrift Mas. ::	6-3½x3¾	216	6.6	176	92-3400	4-♦ ♦	N	Own	4	Own	HyF	H	○ -6.17	Own	O4IH	330	478	Co	2I	84	8⅛x2¾x¼	C
27	(School bus) TL	1310	161		12000	▾4115	6.50/20D	7.00/20	O-Thrift Mas. ::	6-3½x3¾	216	6.6	176	92-3400	4-♦ ♦	Y	Own	4	Own	HyF	H	○ -6.17	Own	O4IH	330	478	Co	2I††		8⅛x2¾x¼	C
28	TVS	1450	137		15000	▾4220	7.50/20D	9.00/20♠¶	O-Load Mas.	6-3 9/16x3 15/16	235	6.7	193	105-3600	4-♦ ♦	Y	Own	4	Own	HyF	H	○ -6.17	Own	O4IH	330	478	Co	2I	60	8⅛x2¾x¼	C
29	TWS	1485	161		15000	▾4295	7.50/20D	9.00/20♠¶	O-Load Mas.	6-3 9/16x3 15/16	235	6.7	193	105-3600	4-♦ ♦	Y	Own	4	Own	HyF	H	○ -6.17	Own	O4IH	330	478	Co	2I	84	8⅛x2¾x¼	C
30	(c.o.e.) TPS	●1805	110		15000	●▾4665	7.50/20D	9.00/20♠¶	O-Load Mas.	6-3 9/16x3 15/16	235	6.7		102-3600	4-♦ ♦	Y	Own	4	Own	HyF	H	○ -6.17	Own	O4IH	330	478	Co	2I	60⅛	8⅛x2¾x¼	C
31	(c.o.e.) TRS	●1840	134		15000	●▾4760	7.50/20D	9.00/20♠¶	O-Load Mas.	6-3 9/16x3 15/16	235	6.7		102-3600	4-♦ ♦	Y	Own	4	Own	HyF	H	○ -6.17	Own	O4IH	330	478	Co	2I	84⅛	8⅛x2¾x¼	C
32	(c.o.e.) TSS	●1875	158		15000	●▾4830	7.50/20D	9.00/20♠¶	O-Load Mas.	6-3 9/16x3 15/16	235	6.7		102-3600	4-♦ ♦	Y	Own	4	Own	HyF	H	○ -6.17	Own	O4IH	330	478	Co	2I	108⅛	8⅛x2¾x¼	C
33	(c.o.e.) TP	●1805	110		16000	●▾4665	7.50/20D	9.00/20♠¶	O-Load Mas.	6-3 9/16x3 15/16	235	6.7		102-3600	4-♦ ♦	Y	Own	4	Own	HyF	H	○ -6.17	Own	O4IH	330	478	Co	2I	60⅛	8⅛x2¾x¼	C
34	(c.o.e.) TR	●1840	134		16000	●▾4760	7.50/20D	9.00/20♠¶	O-Load Mas.	6-3 9/16x3 15/16	235	6.7		102-3600	4-♦ ♦	Y	Own	4	Own	HyF	H	○ -6.17	Own	O4IH	330	478	Co	2I	84⅛	8⅛x2¾x¼	C
35	(c.o.e.) TS	●1875	158		16000	●▾4830	7.50/20D	9.00/20♠¶	O-Load Mas.	6-3 9/16x3 15/16	235	6.7		102-3600	4-♦ ♦	Y	Own	4	Own	HyF	H	○ -6.17	Own	O4IH	330	478	Co	2I	108⅛	8⅛x2¾x¼	C
36	TV	1450	137		16000	▾4220	7.50/20D	9.00/20♠¶	O-Load Mas.	6-3 9/16x3 15/16	235	6.7	193	105-3600	4-♦ ♦	Y	Own	4	Own	HyF	H	○ -6.17	Own	O4IH	330	478	Co	2I	60	8⅛x2¾x¼	C
37	TW	1485	161		16000	▾4295	7.50/20D	9.00/20♠¶	O-Load Mas.	6-3 9/16x3 15/16	235	6.7	193	105-3600	4-♦ ♦	Y	Own	4	Own	HyF	H	○ -6.17	Own	O4IH	330	478	Co	2I	84	8⅛x2¾x¼	C
38	(School bus) TX	1530	199		15000	▾4620	7.50/20D	8.25/20	O-Load Mas.	6-3 9/16x3 15/16	235	6.7	193	105-3600	4-♦ ♦	Y	Own	4	Own	HyF	H	○ -6.17	Own	O4IH	330	478	Co	2I††		8 11/16x2 11/16x3/16	C
39	Corbitt■ 18BG		181		18000		9.00/20	10.00/20	Con M6330	6-4x4⅜	330	6.1	246	104-2800	7-2⅜x12	Y	Cla 205V	5	Tim H100DPH		H	●● -5.29	Tim 32502H	B4IHV			a	TX		8x3¼x¼	T
40	22BG		190		22000		10.00/20	10.00/22	Con B6371	6-4⅛x4⅝	371	6.0	280	100-2600	7-2⅞x13½	Y	Fu 5A43	5	Tim L100DPH		H	●● -5.29	Tim 35000H	B4IHV			a	TX		8x3¼x¼	T
41	25BG		200		25000		10.00/22	11.00/22	Con B6427	6-4 5/16x4⅞	427	5.9	325	127-2600	7-2⅞x13½	Y	Fu 5A43	5	Tim Q100P		H	●● -6.17	Tim 35100TW	Ws4IA			a	TX		8½x3¼x5/16	T
42	(T) 18TG		137		18000		9.00/20	10.00/20	Con M6330	6-4x4⅜	330	6.1	246	104-2800	7-2⅜x12	Y	Cla 205V	5	Tim H100P‡‡		H	●● -5.29	Tim 32505TW	Ws4IA			a	TX		7¾x3¼x5/16	T
43	(T) H18TG		137		20000		10.00/20		Con M6330	6-4x4⅜	330	6.1	246	104-2800	7-2⅜x12	Y	Cla 205V	5	Tim L100P‡‡		H	●● -5.29	Tim 32505TW	Ws4IA			a	TX		7¾x3¼x5/16	T
44	(T) 22TG		144		22000		10.00/20	10.00/22	Con B6427	6-4 5/16x4⅞	427	5.9	325	127-2600	7-2⅞x13½	Y	Fu 5A43	5	Tim L100P‡‡		H	●● -5.29	Tim 35000TW	Ws4IA			a	TX		8x3¼x¼	T
45	(T) H22TG		144		24000		10.00/22		Con B6427	6-4 5/16x4⅞	427	5.9	325	127-2600	7-2⅞x13½	Y	Fu 5A43	5	Tim Q100P‡‡		H	●● -5.29	Tim 35100TW	Ws4IA			a	TX		8x3¼x¼	T
46	(T) 25TG		148		25000		10.00/22	11.00/22	Con R6513	6-4½x5⅜	513	5.9	400	170-2600	7-3¼x—	Y	Spl 6253	5	Tim Q100P‡‡		H	●● -6.17	Tim 35100TW	Ws4IA			a	2		8½x3¼x5/16	T
47	(T) H25TG		148		25000		10.00/22		Con R6513	6-4½x5⅜	513	5.9	400	170-2600	7-3¼x—	Y	Spl 6253	5	Tim R100P‡‡		H	●● -6.17	Tim 35100TW	Ws4IA			a	2		8½x3¼x5/16	T
48	(T) 28TG		147		28000		10.00/22	11.00/24	Con R6602	6-4⅞x5⅜	602	5.9	484	199-2600	7-3¼x—	Y	Fu 5A650	5	Tim S200P‡‡		H	●● -6.42	Tim 26450TW	Ws4IA			a	2D		8½x3¼x5/16	T
49	(D) (T) 22TD		144		22000		10.00/20	10.00/22	Her DWXD	6-4¼x4¾	404	15	320	135-2600		Y	Fu 5A430	5	Tim L300P		H	6.32-8.20	Tim 35000TW	Ws4IA			a	TX		8x3¼x¼	T
50	(D) (T) H22TD		144		22000		10.00/22		Her DWXD	6-4¼x4¾	404	15	320	135-2600		Y	Fu 5A430	5	Tim Q300P		H	6.53-8.53	Tim 35100TW	Ws4IA			a	TX		8x3¼x¼	T
51	(D) (T) 25TD		148		25000		11.00/20	11.00/22	Her DRXC	6-4⅝x5¼	529	14	400	148-2200	7-3½x13¾	Y	Spl 6253	5	Tim Q300P		H	6.53-8.53	Tim 35000TW	Ws4IA			a	2		8½x3¼x5/16	T
52	(D) (T) H25TD		148		25000		10.00/22		Her DRXC	6-4⅝x5¼	529	14	400	148-2200	7-3½x13¾	Y	Spl 6253	5	Tim R300P		H	6.53-8.53	Tim 35000TW	Ws4IA			a	2		8½x3¼x5/16	T
53	(D) (T) 27TD		152		27000		10.00/22	11.00/24	Cum HB600	6-4⅛x6	672	17	500	150-1800	7-4½x16½	Y	Fu 5A920	5	Tim R300P		H	4.92-6.42	Tim 26450W	Ws4IA			a	2		8½x3¼x5/16	T
54	(D) (T) H27TD		152		27000		10.00/22		Cum HB600	6-4⅛x6	672	17	500	150-1800	7-4½x16½	Y	Fu 5A920	5	Tim S200P‡‡		H	●● -6.42	Tim 26450W	Ws4IA			a	2		8½x3¼x5/16	T
55	(D) (T) 28TD		155		28000		10.00/22	11.00/24	Cum NHB600	6-5⅛x6	743	15	575	200-2100	7-4½x16½	Y	Fu 5A920	5	Tim S200P‡‡		H	6.42	Tim 26450W	Ws4IA			a	2D		8½x3¼x5/16	T
56	(T) 26TG		148		26000		10.00/22	11.00/22	Con R660	6-4⅞x5⅜	602	5.9	484	199-2600	7-3¼x—	Y	Fu 5A65	5	Tim R100P‡‡		H	●● -5.29	Tim 35100TW	Ws4IA			a	2		8½x3¼x5/16	T
57	Crosley B		80		2130	1330●●	4.50/12		Own ¶	4-2½x2¼	44	7.8	33	26-5400	5-♦	..	WG-ASI-T92	3	Spl	2F		●● -5.17	Own	G-H	♦♦♦	♦♦♦	C	2			C
58	Dodge B-2-B		108	108	4850		6.00/16S	6.50/16S	Own T-172	6-3¼x4⅜	217	6.6	172	96-3600	4-2½x4.8	N	NP-88840	3	Own T172	H‡	H	4.1-4.78	Own T172	O4IH	175	264	cE	TX	40	[illegible]	C
59	B-2-C		116	116	5800		7.00/16S	7.00/15S	Own T-174	6-3¼x4⅜	217	6.6	172	96-3600	4-2½x4.8	N	NP-88840	3	Own T174	H‡	H	4.1-4.78	Own T174	O4IH	184	277	Co	TX	48	[illegible]	C
60	B-2-D		116	126	8000		6.00/16S▵	6.00/20	Own T-176	6-3¼x4⅝	230	6.7	187	102-3600	4-2½x4.8	N	NP-88870	3	Own T176	HyF	H	3.9-4.89	Own T176	O4IH	209	316	Co	TX	48	[illegible]	C
61	Rt. Van Sp. B1DU		102	117	7900		6.50/16S▵	8.25/16S	Own T-164	6-3¼x4⅝	230	6.6	186	94-3200	4-2½x4.8	N	NP-88490	3	Own T164	HyF	H	3.9-4.89	Own T164	O4IH	209	316	Co	TX		[illegible]	C
62	Rt. Van Sp. B1EU		102	142	10100		7.50/16S•	9.00/16S	Own T-165	6-3¼x4⅝	230	6.6	186	94-3200	4-2½x4.8	N	NP-88500	4	Own T165	HyF	H	4.89-5.8	Own T165	O4IH	234	355	Co	TX		[illegible]	C
63	B-2-FL		128	152	9500		6.00/20‡	6.50/20	Own T-178	6-3 7/16x4¼	236	6.6	192	109-3600	4-2½x5.04	N	NP-39760	4	Own T178	HyF	H	5.6-6.8	Own T178	O4IH	336	479		TX	60	.21x2¾x7	C
64	B-2-F		128	170	13500		6.00/20‡	8.25/20♠	Own T-178	6-3 7/16x4¼	236	6.6	192	109-3600	4-2½x5.04	N	NP-39760	4	Own T178	HyF	H	5.6-6.8	Own T178	O4IH	336	479		TX	60	.21x2¾x7	C
65	B-2-FA		128	170	13500		6.50/20	8.25/20♠	Own T-178	6-3 7/16x4¼	236	6.6	192	109-3600	4-2½x5.04	Y	NP-39760	4	Eat A4-1350	SFd	H	5.83-8.11	Own T178	O4IH	336	479		TX	60	.21x3¾x7	C
66	B-2-G		128	192	14500		6.50/20¶	8.25/20	Own TX-178	6-3 7/16x4¼	236	6.6	192	109-3600	4-2½x5.04	N	NP-88570	4	Own TX-178	HyF	H	5.6-6.8	Own T-178	O4IH	336	479	Co	TX	60	.21x2 11/16x8 3/16	C
67	B-2-GA		128	192	14500		6.50/20¶	8.25/20	Own TX-178	6-3 7/16x4¼	236	6.6	192	109-3600	4-2½x5.04	Y	NP-88570	4	Eat A5-1350	SFd	H	5.8-8.8	Own TX-178	O4IH	336	479	Co	TX	60	.21x2 11/16x8 3/16	C
68	B-2-GM		107	161	14750		6.50/20	8.25/20	Own TX-182	6-3 7/16x4⅜	236	6.6	192	109-3600	4-2½x5.04	N	NP-88850	4	Own TX-182	HyF	H	5.6-6.8	Own TX-182	O4IH	336	479	Co	TX	60	.21x2 11/16x8 3/16	C

¶—8.25/20 front tires are required when 9.00/20 dual rears are used.
●●—Pick-up truck; panel delivery 1360.
‡‡—Two speed axles available.
●—Includes cab.
¶—Front only; Rear 9.00/20

::—Own Loadmaster engine available on models TJ-TK-TL at extra cost.
○—5.43 axle available on Models TJ-TK-TL and 2-speed axle available on TVS-TWS-TP-TPS-TR-TRS-TS-TSS-TV-TW-TX.
•—Front only, rear 8.25/16.

‡—Front only: Rear 6.50/20S.
♠—7.50/20 can be used on the front with no decrease in G. V. W. when 8.25/20 are used on dual rear wheels.
♦♦♦—Two moulded buttons per wheel—1¼" diameter, ⅜" thick.

†-Forward control Chassis for Door-to-Door delivery bodies. These chassis do not have cowl.
††—Also available in 5.14 ratio.
▵—Front only; Rear 7.00/16S.
♦—1 Front 1.375x1.312; 3 Center 1.375x.870; 1 Rear 1.500x1.499. §—4-speed transmission available.
■—Sleeper cab models available.

♦♦—Diameter: (Average) Front, 2.6858; Front Center, 2.7168; Rear Center, 2.7478; Rear, 2.7788; Total length, 5⅝.
▾—Includes spare tire, full fuel tank and cooling system.
♠—For only single rear; Dual rear are 7.50/20.
††—Propeller shaft type available at extra cost.

For Directory of the Manufacturers listed above, see page 63.

CURRENT TRUCK SPECIFICATIONS — *Continued*

Line Number	MAKE AND MODEL	Chassis List Price	WHEELBASE: Minimum Standard	WHEELBASE: Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	TIRE SIZES (D-dual rear, S-single rear): Standard Front and Rear	TIRE SIZES: Maximum Authorized Tire Size (Duals unless noted)	ENGINE DETAILS: Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	Main Bearings: Number, Diameter and Length	Governor Standard	TRANSMISSION: Make and Model	Forward Speeds	REAR AXLE: Make and Model	Gear and Type	Drive & Torque	Gear Ratio Range in High	FRONT AXLE: Make and Model	BRAKES (SERVICE): Make, Location, Type, Operation	Lining Area	Drum Area	Drum Material	Hand Location Type	C-A Dimensions (Min. Std. W. B.)	FRAME: Side Rail Dimensions	FRAME: Type
	Dodge—Cont'd.																														
1	B-2-GMA		107	161	14750		6.50/20	8.25/20	Own TX-182	6-3 7/16x4 1/4	236	6.6	192	109-3600	4-2 1/2x5.04	Y	NP-88850	4	Eat A5-1350	SFd	H	5.8-8.8	Own TX-182	O4IH	336	479	Co	TX	60	.21x2 11/16x8 7/32	C
2	B-2-H		128	192	16000		7.50/20	8.25/20	Own T-192	6-3 7/16x4 1/4	236	6.6	192	109-3600	4-2 1/2x5.04	Y	NP-88570	4	Own T-192	HyF	H	6.2-6.8	Own TX-192	O4IHV	336	479	Co	TX	60	.21x2 11/16x8 7/32	C
3	B-2-HA		128	192	16000		7.50/20	8.25/20	Own T-192	6-3 7/16x4 1/4	236	6.6	192	109-3600	4-2 1/2x5.04	Y	NP-88570	4	Eat A5-1350	SFd	H	5.8-8.8	Own T-192	O4IHV	336	479	Co	TX	60	.21x2 11/16x8 7/32	C
4	B-2-HM		107	161	16250		7.50/20	8.25/20	Own T-194	6-3 7/16x4 1/4	236	6.6	192	109-3600	4-2 1/2x5.04	Y	NP-88850	4	Own T-194	HyF	H	6.2-6.8	Own T-194	O4IHV	336	479	Co	TX	60	.21x2 11/16x8 7/32	C
5	B-2-HMA		107	161	16250		7.50/20	8.25/20	Own T-194	6-3 7/16x4 1/4	236	6.6	192	109-3600	4-2 1/2x5.04	Y	NP-88850	4	Eat A5-1350	SFd	H	5.8-8.8	Own T-194	O4IHV	336	479	Co	TX	60	.21x2 11/16x8 7/32	C
6	B-2-HH		128	192	16000		7.50/20	8.25/20	Own T-192	6-3 7/16x4 1/4	236	6.6	192	109-3600	4-2 1/2x5.04	Y	NP-88570	4	Own T-192	HyF	H	6.2-6.8	Own T-192	O4IHV	336	479	Co	TX	60	.21x2 11/16x8 7/32	C
7	B-2-HHA		128	192	16000		7.50/20	8.25/20	Own T-192	6-3 7/16x4 1/4	236	6.6	192	109-3600	4-2 1/2x5.04	Y	NP-88570	4	Eat A5-1350	SFd	H	5.8-8.8	Own T-192	O4IHV	336	479	Co	TX	60	.21x2 11/16x8 7/32	C
8	B-2-HHM		107	161	16250		7.50/20	8.25/20	Own T-194	6-3 7/16x4 1/4	236	6.6	192	109-3600	4-2 1/2x5.04	Y	NP-88850	4	Own T-194	HyF	H	6.2-6.8	Own T-194	O4IHV	336	479	Co	TX	60	.21x2 11/16x8 7/32	C
9	B-2-HHMA		107	161	16250		7.50/20	8.25/20	Own T-194	6-3 7/16x4 1/4	236	6.6	192	109-3600	4-2 1/2x5.04	Y	NP-88850	4	Eat A5-1350	SFd	H	5.8-8.8	Own T-194	O4IHV	336	479	Co	TX	60	.21x2 11/16x8 7/32	C
10	B-2-JL		128	212	17000		6.00/20	8.25/20	Own T-180	6-3 7/16x4 1/2	250	6.6	204	114-3600	4-2 1/2x5.04	Y	NP-88700	5	Own T-180	HyF	H	6.2-7.16	Own T-180	O4IHV	396	553	e	TX	60	7/32x2 11/16x8 7/32	P
11	B-2-JAL		128	212	17000		6.00/20	8.25/20	Own T-180	6-3 7/16x4 1/2	250	6.6	204	114-3600	4-2 1/2x5.04	Y	NP-88700	5	Eat A5-1350	SFd	H	5.8-8.8	Own T-180	O4IHV	396	553	e	TX	60	7/32x2 11/16x8 7/32	P
12	B-2-J		128	212	17000		6.50/20	8.25/20	Own T-180	6-3 7/16x4 1/2	250	6.6	204	114-3600	4-2 1/2x5.04	Y	NP-88700	5	Own T-180	HyF	H	6.2-7.16	Own T-180	O4IHV	396	553	e	TX	60	7/32x2 11/16x8 7/32	P
13	B-2-JA		128	212	17000		6.50/20	8.25/20	Own T-180	6-3 7/16x4 1/2	250	6.6	204	114-3600	4-2 1/2x5.04	Y	NP-88700	5	Eat A5-1350	SFd	H	5.8-8.8	Own T-180	O4IHV	396	553	e	TX	60	7/32x2 11/16x8 7/32	P
14	B-2-JML		107	161	17250		6.00/20	8.25/20	Own T-184	6-3 7/16x4 1/2	250	6.6	204	114-3600	4-2 1/2x5.04	Y	NP-88920	5	Own T-184	HyF	H	6.2-7.16	Own T-184	O4IHV	396	553	e	TX	60	7/32x2 11/16x8 7/32	P
15	B-2-JMAL		107	161	17250		6.00/20	8.25/20	Own T-184	6-3 7/16x4 1/2	250	6.6	204	114-3600	4-2 1/2x5.04	Y	NP-88920	5	Eat A5-1350	SFd	H	5.8-8.8	Own T-184	O4IHV	396	553	e	TX	60	7/32x2 11/16x8 7/32	P
16	B-2-JM		107	161	17250		6.50/20	8.25/20	Own T-184	6-3 7/16x4 1/2	250	6.6	204	114-3600	4-2 1/2x5.04	Y	NP-88920	5	Own T-184	HyF	H	6.2-7.16	Own T-184	O4IHV	396	553	e	TX	60	7/32x2 11/16x8 7/32	P
17	B-2-JMA		107	161	17250		6.50/20	8.25/20	Own T-184	6-3 7/16x4 1/2	250	6.6	204	114-3600	4-2 1/2x5.04	Y	NP-88920	5	Eat A5-1350	SFd	H	5.8-8.8	Own T-184	O4IHV	396	553	e	TX	60	7/32x2 11/16x8 7/32	P
18	B-2-KAL		128	212	17500		8.25/20▲	9.00/20	Own TX-180	6-3 7/16x4 1/2	250	6.6	204	114-3600	4-2 1/2x5.04	Y	NP-88700	5	Eat 1650	SFd	H	6.14-9.04	Own T-180	O4IHV	396	553	e	TX	60	7/32x2 11/16x8 7/32	P
19	B-2-KL		128	212	17500		8.25/20	9.00/20	Own TX-180	6-3 7/16x4 1/2	250	6.6	204	114-3600	4-2 1/2x5.04	Y	NP-88700	5	Tim H-101	SFd	H	6.8-7.2	Own T-180	O4IHV	396	553	e	TX	60	7/32x2 11/16x8 7/32	P
20	B-2-K		128	212	17500		8.25/20	9.00/20	Own TX-180	6-3 7/16x4 1/2	250	6.6	204	114-3600	4-2 1/2x5.04	Y	NP-88700	5	Tim H-101	SFd	H	6.8-7.2	Own T-180	O4IHV	396	553	e	TX	60	7/32x2 11/16x8 7/32	P
21	B-2-KA		128	212	17500		8.25/20	9.00/20	Own TX-180	6-3 7/16x4 1/2	250	6.6	204	114-3600	4-2 1/2x5.04	Y	NP-88700	5	Eat 1650	SFd	H	6.14-9.04	Own TX-180	O4IHV	396	553	e	TX	60	7/32x2 11/16x8 7/32	P
22	B-2-KMAL		107	161	17750		8.25/20	9.00/20	Own TX-184	6-3 7/16x4 1/2	250	6.6	204	114-3600	4-2 1/2x5.04	Y	NP-88920	5	Eat 1650	SFd	H	6.14-9.04	Own TX-184	O4IHV	396	553	e	TX	60	7/32x2 11/16x8 7/32	P
23	B-2-KML		107	161	17750		8.25/20	9.00/20	Own TX-184	6-3 7/16x4 1/2	250	6.6	204	114-3600	4-2 1/2x5.04	Y	NP-88920	5	Tim H-101	SFd	H	6.8-7.2	Own TX-184	O4IHV	396	553	e	TX	60	7/32x2 11/16x8 7/32	P
24	B-2-KM		107	161	17750		8.25/20	9.00/20	Own TX-184	6-3 7/16x4 1/2	250	6.6	204	114-3600	4-2 1/2x5.04	Y	NP-88920	5	Tim H-101	SFd	H	6.8-7.2	Own TX-184	O4IHV	396	553	e	TX	60	7/32x2 11/16x8 7/32	P
25	B-2-KMA		107	161	17750		8.25/20	9.00/20	Own TX-184	6-3 7/16x4 1/2	250	6.6	[illegible]	114-3600	4-2 1/2x5.04	Y	NP-88920	5	Eat 1650	SFd	H	6.14-9.04	Own TX-184	O4IHV	396	553	e	TX	60	7/32x2 11/16x8 7/32	P
26	B-2-R		130	229	19000		7.50/20	9.00/20	Own T-186	6-3 3/4x4 5/8	306	6.4	245	122-3200	7-3x11.23	Y	NP-88220	5	Tim H-100	HyF	H	•• -6.8	Own TX-186	O4IHV	397	609	e	TX	60	7/32x2 11/16x9 11/16	P
27	B-2-RA		130	229	19000		7.50/20	9.00/20	Own T-186	6-3 3/4x4 5/8	306	6.4	245	122-3200	7-3x11.23	Y	NP-88220	5	Tim H-300	SFd	H	6.14-8.15	Own T-186	O4IHV	397	609	e	TX	60	7/32x2 11/16x9 11/16	P
28	B-2-T		130	190	21000		7.50/20▲	10.00/20	Own T-188	6-3 3/4x5	331	6.4	270	128-3000	7-3x11.23	Y	NP-88450	5	Tim L-100	HyF	H	6.8-8.2	Own 32516A1	O4IHV	425	666	e	TX	60	1/4x3x10	P
29	B-2-TA		130	190	21000		7.50/20▲	10.00/20	Own T-188	6-3 3/4x5	331	6.4	270	128-3000	7-3x11.23	Y	NP-88450	5	Tim L-300	SFd	H	6.3-9.18	Tim 32516A1	O4IHV	425	666	e	TX	60	1/4x3x10	P
30	B-2-V		130	190	23000		9.00/20†	11.00/20	Own TX-188	6-3 3/4x5	331	6.4	270	128-3000	7-3x11.23	Y	NP-88450	5	Tim Q-100	HyF	H	6.8-7.8	Tim 35020nx9	O4IHV	486	770	e	TX	60	1/4x3x10	P
31	B-2-VA		130	190	23000		9.00/20†	11.00/20	Own TX-188	6-3 3/4x5	331	6.4	270	128-3000	7-3x11.23	Y	NP-88450	5	Tim Q-300	SFd	H	6.5-9.5	Tim 35020nx9	O4IHV	486	770	e	TX	60	1/4x3x10	P
32	YL-YAL-Y-YA		130	190	28000		9.00/20†	11.00/20	Own T-190	6-4x5	377	6.5	330	154-3000	7-3x11.2	Y	Cla-290-V2	5	Tim Q-100	HyF	H	††	Tim 32516	O4IHV	486	770	e	TX	60	7/32x3 7/32x10 1/4	P
	School Buses																														
33	B-2-FS		152	170	13500		6.50/20	7.50/20	Own TS-178	6-3 7/16x4 1/4	236	6.6	192	109-3600	4-2 1/2x5.04	N	NP-39760	4	Own TS-178	HyF	H	5.6-6.8	Own TX-178	O4IHV	336	479	Co	TX	.....	1/4x2 11/16x7 7/32	C
34	B2-GS		192	192	15000		7.50/20	7.50/20-10	Own TXS-178	6-3 7/16x4 1/4	236	6.6	192	109-3600	4-2 1/2x5.04	N	NP-88570	4	Own TX-178	HyF	H	5.6-6.8	Own TXS-178	O4IHV	336	479	Co	TX	.....	7/32x2 1/4x8 3/16	C
35	B2-HHS		192	192	15500		7.50/20	8.25/20	Own TS-192	6-3 7/16x4 1/4	236	6.6	192	109-3600	4-2 1/2x5.04	Y	NP-88570	4	Own TS-192	HyF	H	6.2-6.8	Own TS-192	O4IHV	336	479	Co	TX	.....	.21x2 11/16x8 7/32	C
36	B-2-JS		212	212	17000		7.50/20	8.25/20	Own TS-180	6-3 7/16x4 1/2	250	6.6	204	114-3600	4-2 1/2x5.04	Y	NP-88700	5	Own TS-190	HyF	H	6.2-7.16	Own TS-180	O4IHV	396	553	e	TX	.....	7/32x2 11/16x8 7/32	C
37	B-2-RS		229	229	19000		8.25/20	9.00/20	Own TS-186	6-3 3/4x4 5/8	306	6.4	245	122-3200	7-3x11.2	Y	NP-88220	5	Tim H100	HyF	H	6.8	Own T-186	O4IHV	397	609	e	TX	.....	7/32x2 11/16x9 11/16	P
38	Duplex ... T		136	220	18000	6600	8.25/20D	9.00/20	Her JXD	6-4x4 1/4	320	6.2	240	113-3000	7-2 1/2x10 11/16	Y	Fu 5B330	5	Tim H100	B	H	•• -7.20	Tim 32502	L4IHV	420	654	A	TX	57 1/4	9 1/4x3 1/2x3/16	C
39	TH-404		136	220	18000	6900	8.25/20D	9.00/20	Her WXLC3	6-4 1/4x4 3/4	404	5.8	312	139-2600	7-2 5/8x13 1/4	Y	Fu-5A430	5	Tim H-300	DF	H	6.13-8.15	Tim 32502	L4IHV	420	654	A	TX	49 1/4	9 1/2x3 1/2x3/16	C
40	R		136	220	25000	8820	9.00/20D	10.00/20	Her WXLC-3	6-4 1/4x4 3/4	404	5.8	312	139-2600	7-2 5/8x13 1/4	Y	Fu 5A43	5	Tim Q300	DF	R	6.53-8.53	Tim 35100	L4IHV	730	1016	A	TX	49 1/2	9 1/4x3 1/2x3/16	C
41	SH-501		172	208	27000	9500	10.00/20	11.00/20	Her RXB	6-4 1/2x5 1/4	501	5.4	360	137-2400	7-3x13 1/4	Y	Fu 5A620		Tim Q200	2F	R	•• -7.77	Tim 35100	BW4IA	730	1016	A	TX	61 1/4	9 1/2x3 1/2x3/16	C
42	JHA		148	220	28000	9800	10.00/20D	11.00/20	Her RXB	6-4 1/2x5 1/4	501	5.4	360	137-2400	7-3x13 1/4	Y	Fu 5A620	5	Tim S200	2F	R	•• -9.83	Tim 26450	BW4IA	912	1311	A	TX	61 1/2	10 1/4x3 1/2x3/16	C
43	JH-558		148	220	28000	9800	10.00/20D	11.00/20	Her RXLD	6-4 5/8x5 1/2	558	6.3	430	154-2400	7-3 1/2x13 1/4	Y	Fu-5C650	5	Tim S-300	DF	R	6.53-8.53	Tim 26450	BW4IA	912	1311	A	TX	60 3/4	10 1/4x3 1/2x3/16	C
44	KHA		148	220	32000	10500	11.00/20D	11.00/20	Her RXC	6-4 5/8x5 1/4	529	5.4	395	132-2300	7-3x13 1/4	Y	Fu 5A620	5	Tim U-200	2F	R	•• -9.83	Tim 26450	BW4IA	912	1311	A	TX	60 3/4	10 1/4x3 1/2x3/16	C
45	L		148	220	37000	11300	11.00/20D	11.00/20	Her RXLD	6-4 5/8x5 1/2	558	5.4	430	154-2400	7-3 1/2x13 1/4	Y	Fu 5C650	5	Tim U-200	2F	R	•• -9.83	Tim 26450	BW4IA	912	1311	A	TX	60 3/4	10 1/4x3 1/2x3/16	C
46	Federal ... 15M		135	194	14500	4080	6.50/20D	7.50/20	Her JXEF	6-3 1/2x4 1/4	245	...	184	93-3400	7-2 1/2x10 11/16	N	WGT9A	4	T53547DPH	BF	H	5.66	Tim 30000HX	L4IHV	310	482	a	TX	56	8 3/16x2 1/4x1/4	T
47	16M		139	250	15500	4460	7.50/20D	7.50/20	Her JXEF	6-3 1/2x4 1/4	245	...	184	93-3400	7-2 1/2x10 11/16	N	WG T9A	4	T 53547DPH	BF	H	•• -5.66	Tim 30000HX	L4IHV	310	482	a	TX	60	8 3/16x2 1/4x3/16	T
48	16M2		139	250	15500	[illegible]	7.50/20D	8.25/20D	Her JXEF	6-3 1/2x4 1/4	245	...	184	93-3400	7-2 1/2x10 11/16	N	WG T9A	4	Tim E300DPH	dF	H	6.13-8.10	Tim 30000HX	L4IHV	310	482	a	TX	60	8 3/16x2 1/4x3/16	T
49	18M		139	250	17000	4700	8.25/20D	8.25/20	Her JXBF	6-3 5/8x4 1/4	263	...	192	98-3200	7-2 1/2x10 11/16	N	WG T9A	4	Tim E100DPH	SF	H	•• -6.20	Tim 30003H	LT4IHV	314	532	a	TX	60	8 3/16x2 1/4x3/16	T
50	18M2		139	250	17000	4830	8.25/20D	8.25/20	Her JXBF	6-3 5/8x4 1/4	263	...	192	98-3200	7-2 1/2x10 11/16	N	WG T9A	8	Tim E300DPH	dF	H	6.13-8.10	Tim 30003H	LT4IHV	314	532	a	TX	60	8 3/16x2 1/4x3/16	T
51	25M		139	250	19000	4950	8.25/20D	9.00/20	Her JXCF	6-3 3/4x4 1/4	282	...	212	103-3200	7-2 1/2x10 3/16	N	Cla 205VO	5	TimH100DPH	SF	H	•• -6.80	Tim 3100H	LT4IHV	346	583	a	TX	60	8 3/16x2 1/4x3/16	T
52	25M2		139	250	19000	5100	8.25/20D	9.00/20	Her JXCF	6-3 3/4x4 1/4	282	...	212	103-3200	7-2 1/2x10 3/16	N	Cla 205VO	5	TimH300DPH	dF	H	6.13-8.15	Tim 3100H	LT4IHV	346	583	a	TX	60	8 3/16x2 1/4x3/16	T
53	29M		139	250	21500	5500	9.00/20D	10.00/20	Her JXDF	6-4x4 1/4	320	...	250	115-3100	7-2 1/2x10 11/16	Y	Cla 205V	5	Tim L100DPH	SF	H	•• -6.83	Tim 32514H	LT4IHV	466	820	a	TX	60	8 3/16x2 1/4x3/16	T
54	29M2		139	250	21500	5690	9.00/20D	10.00/20	Her JXDF	6-4x4 1/4	320	...	250	115-3100	7-2 1/2x10 11/16	Y	Cla 205V	10	Tim L300DPH	dF	H	6.32-8.22	Tim 32514H	LT4IHV	466	820	a	TX	60	8 3/16x2 1/4x3/16	T
55	29MA		155	250	21500	5950	9.00/20D	10.00/20	Her JXDF	6-4x4 1/4	320	...	250	115-3100	7-2 1/2x10 11/16	Y	Cla 205V♦	15	Tim L100DPH	SF	H	•• -6.83	Tim 32514H	LT4IHV	466	820	a	TD	76	8 3/16x2 1/4x3/16	T
56	29ML		139	250	21500	5535	9.00/20D	10.00/20	Her JXLDF	6-4x4 1/2	339	...	272	131-3200	7-2 1/2x10 11/16	Y	Cla 205V	5	Tim L100DPH	SF	H	•• -6.83	Tim 32514H	LT4IHV	466	820	a	TX	60	8 3/16x2 1/4x3/16	T
57	29ML2		139	250	21500	5725	9.00/20D	10.00/20	Her JXLDF	6-4x4 1/2	339	...	272	131-3200	7-2 1/2x10 11/16	Y	Cla 205V	10	Tim L300DPH	dF	H	6.32-8.22	Tim 32514H	LT4IHV	466	820	a	TX	60	8 3/16x2 1/4x3/16	T
58	29MLA		155	250	21500	5985	9.00/20D	10.00/20	Her JXLDF	6-4x4 1/2	339	...	272	131-3200	7-2 1/2x10 11/16	Y	Cla 205V	15	Tim L100DPH	SF	H	•• -6.83	Tim 32514H	LT4IHV	466	820	a	TD	76	8 3/16x2 1/4x3/16	T
59	35M		143	203	22500	6925	9.00/20D	10.00/20	Con T6371F	6-4 1/4x4 3/8	371	...	290	140-3000	7-2 7/8x13 1/2	Y	Cla 290VO	5	Tim L100DPH	SF	R	•• -6.83	Tim 32514H	LT4IHV	466	820	a	TX	60 1/2	10 1/4x3 1/4x3/16•	T
60	35M2		143	203	22500	7115	9.00/20D	10.00/20	Con T6371F	6-4 1/4x4 3/8	371	...	290	140-3000	7-2 7/8x13 1/2	Y	Cla 290VO	10	Tim L300DPH	dF	R	6.32-8.22	Tim 32514H	LT4IHV	466	820	a	TX	60 1/2	10 1/4x3 1/4x3/16•	T
61	45M		143	203	26000	8005	10.00/20D	10.00/24	Con T6427F	6-4 7/16x4 5/8	427	...	347	158-2800	7-2 7/8x13 1/2	Y	Cla 290VO	5	Tim Q100P	SF	R	•• -6.83	Tim 35011TW	TW4IA	606	933	a	TD	60 1/2	10 1/4x3 1/4x3/16•	T
62	45M2		143	203	26000	8380	10.00/20D	10.00/24	Con T6427F	6-4 7/16x4 5/8	427	...	347	158-2800	7-2 7/8x13 1/2	Y	Cla 290VO	10	Tim Q300P	dF	R	6.53-8.53	Tim 35011TW	TW4IA	606	933	a	TD	60 1/2	10 1/4x3 1/4x3/16•	T
63	55M2		143	203	30000	8635	11.00/22D	11.00/24	Con T6427F	6-4 7/16x4 5/8	427	...	347	158-2800	7-2 7/8x13 1/2	Y	Cla 290VO	10	Tim S300P	HyF	R	6.53-8.53	Tim 36021TW	Tw4IA	722	1051	a	TD	60 1/2	10 1/4x3 1/4x3/16	T
64	55MA		155	203	30000	8765	11.00/22D	11.00/24	Con T6427F	6-4 7/16x4 5/8	427	...	347	158-2800	7-2 7/8x13 1/2	Y	Cla 290V♦	15	Tim S-200P	2F	R	•• -7.08	Tim 36021TW	TW4IA	722	1051	a	TD	72 1/2	10 1/4x3 1/4x3/16•	T
65	60MA		155	203	32000	9600	11.00/22D	11.00/24	Con 22RF	6-4 1/2x5 1/4	501	...	385	148-2400	7-2 7/8x14 1/2	Y	Fu 5A65§	15	Tim S200P	2F	R	•• -7.08	Tim 36021TW	Tw4IA	722	1051	a	FX	72 1/2	10 1/4x3 1/4x3/16•	T
66	60M2		143	203	32000	9370	11.00/22D	11.00/24	Con 22RF	6-4 1/2x5 1/4	501	...	385	148-2400	7-2 7/8x14 1/2	Y	Fu 5A650	10	Tim S300P	HyF	R	6.53-8.53	Tim 36021TW	Tw4IA	722	1051	a	TX	60 1/2	10 1/4x3 1/4x3/16	T
67	65M2		141	201	33000	9995	11.00/22D	11.00/24	Con R6602F	6-4 3/4x5 5/8	602	...	466	200-2600	7-3 1/4x14 1/2	Y	Fu 5A650	10	Tim S300P	HyF	R	6.53-8.53	Tim 36000TW	Ws4IA	722	1051	a	TX	60 1/2	10 1/4x3 1/4x3/16	T
68	65MA		153	201	33000	10225	11.00/22D	11.00/24	Con R6602F	6-4 3/4x5 5/8	602	...	466	205-3000	7-3 1/4x14 1/2	Y	Fu 5A65§	15	Tim S200P	HyF	R	•• -7.08	Tim 36000TW	Ws4IA	722	1051	a	TX	72 1/2	10 1/4x3 1/4x3/16•	T
	Ford F-1																														
69	Cowl ... 9HC-84	930	114	114	4700	2226	6.00/16-4	6.50/16-6S	Own 7HC	6-3.3x4.4	226	6.8	180	95-3300	4-2.87x5.0	N	Own 21C	3	Own 8C	H 1/2	H	3.73-4.27	Own 8RC	O4IH	178	259	Co	M2	40.06	5.92x2 3/8x15	T
70	Cowl ... 9RC-84	960	114	114	4700	2266	6.00/16-4	6.50/16-6S	Own 8RC	8-3 3/16x3 3/4	239	6.8	180	100-3800	3-2.49x5.2	N	Own 21C	3	Own 8C	H 1/2	H	3.73-4.27	Own 8RC	O4IH	178	259	Co	M2	40.06	5.92x2 3/8x15	T
	F-2																														
71	Cowl ... 9HD-84	1045	122	122	5700	2616	6.50/16-6	7.50/16-6S	Own 7HD	6-3.3x4.4	226	6.8	180	95-3300	4-2.87x5.0	N	Own 51Y	4	Own 8D	SF	H	•• -4.86	Own 8RD	O4IH	167	264	Co	M2	48.06	6x2 1/4x.19	T
72	Cowl ... 9RD-84	1075	122	122	5700	2656	6.50/16-6	7.50/16-6S	Own 8RD	8-3 3/16x3 3/4	239	6.8	180	100-3800	3-2.49x5.2	N	Own 51Y	4	Own 8D	SF	H	•• -4.86	Own 8RD	O4IH	167	264	Co	M2	48.06	6x2 1/4x.19	T

†—Front only; Rear 10.00/20.
▲—Front only; Rear 8.25/20.

††—6.8–9.23 for Models YL and Y. 6.53–8.53 standard on YAL and YA, but 7.27/9.49 ratios are also available on these two models.

•—For shorter wheelbases—10x3 1/2x1/4.
♦—Auxiliary trans. Spicer 6231B, three forward speeds.

§—Auxiliary trans. Spicer 703F, three forward speeds.
††—Front only; Rear 8.25/16.
▲—Front only; Rear 9.00/20-10.

For Directory of the Manufacturers listed above, see page 63.

CURRENT TRUCK SPECIFICATIONS — *Continued*

Line Number	Make and Model	Chassis List Price	Wheel-Base: Minimum Standard	Wheel-Base: Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	Tire Sizes (D-dual rear, S-single rear): Standard Front and Rear	Tire Sizes: Maximum Authorized Tire Size (Duals unless noted)	Engine Details: Make and Model	Engine: No. of Cylinders, Bore and Stroke	Engine: Displacement	Engine: Comp. Ratio	Engine: Torque lb. ft.	Engine: Max. Brake H.P. at R.P.M. Given	Engine: Main Bearings Number Diameter and Length	Governor Standard	Transmission: Make and Model	Transmission: Forward Speeds	Rear Axle: Make and Model	Rear Axle: Gear and Type	Rear Axle: Drive & Torque	Rear Axle: Gear Ratio Range in High	Front Axle: Make and Model	Brakes Service: Make Location Type Operation	Brakes Service: Lining Area	Brakes Service: Drum Area	Brakes Service: Drum Material	Brakes: Hand Location Type	C-A Dimensions (Min. Std. W. B.)	Frame: Side Rail Dimensions	Frame: Type
	Ford, Continued																														
	F-3																														
1	Cowl....9HY-84	1120	122	122	6800	2849	7.00/17-6S	7.50/17-8S	Own 7HY	6-3.3x4.4	226	6.8	180	95-3300	4-2.87x5.0	N	Own 51Y	4	Own 8Y	SF	H	•• -4.86	Own 8RD	O4IH	188	308	Co	M2	48.06	6x2¼x.19	T
2	Cowl....9RY-84	1150	122	122	6800	2889	7.00/17-6S	7.50/17-8S	Own 8RY	8-3 3/16x3¾	239	6.8	180	100-3800	3-2.49x5.2	N	Own 51Y	4	Own 8Y	SF	H	•• -4.86	Own 8RD	O4IH	188	308	Co	M2	48.06	6x2¼x.19	T
	F-3 Parcel Dlvy.																														
3	w/s........9HJ	1375	104	104	7800	3030	7.00/16-6	7.50/17-8S	Own 8HJ	6-3.3x4.4	226	6.8	180	95-3300	4-2.87x5.0	N	Own 8J	3	Own 8J	SF	H	•• -4.86	Own 8J	O4IH	215	330	C	TX	82♠	6x2¼x.19	T
4	w/s........9H2J	1390	122	122	7800	3100	7.00/16-6	7.50/17-8S	Own 8HJ	6-3.3x4.4	226	6.8	180	95-3300	4-2.87x5.2	N	Own 8J	3	Own 8J	SF	H	•• -4.86	Own 8J	O4IH	215	330	C	TX	100♠	6x2¼x.19	T
	F-4																														
5	Cowl...9HTL-84	1175	134	134	10000	3457	7.00/20-8S	7.00/18-8	Own 7HT	6-3.3x4.4	226	6.8	180	95-3300	4-2.87x5.0	N	Own 41T	4	Own 8T	SF	H	5.14-5.83	Own 7RTL	O4IH	302	506	Co	TX	60.06	7x2¾x.21	T
6	Cowl...9RTL-84	1205	134	134	10000	3497	7.00/20-8S	7.00/18-8	Own 8RT	8-3 3/16x3¾	239	6.8	180	100-3800	3-2.49x5.2	N	Own 41T	4	Own 8T	SF	H	5.14-5.83	Own 7RTL	O4IH	302	506	Co	TX	60.06	7x2¾x.21	T
	F-5																														
7	Cowl....9HT-84	1220	134	134	14000	3646	6.50/20-6	7.50/20-8	Own 7HT	6-3.3x4.4	226	6.8	180	95-3300	4-2.87x5.0	N	Own 41T	4	Own 8T	SF	H	5.14-6.67	Own 7RT	O4IH	302	506	Co	TX	60.06	7x2¾x.21	T
8	Cowl....9RT-84	1250	134	134	14000	3686	6.50/20-6	7.50/20-8	Own 8RT	8-3 3/16x3¾	239	6.8	180	100-3800	3-2.49x5.2	N	Own 41T	4	Own 8T	SF	H	5.14-6.67	Own 7RT	O4IH	302	506	Co	TX	60.06	7x2¾x.21	T
9	Cowl...9HST-84	1250	158	158	14000	3796	6.50/20-6	7.50/20-8	Own 7HT	6-3.3x4.4	226	6.8	180	95-3300	4-2.87x5.0	N	Own 41T	4	Own 8T	SF	H	5.14-6.67	Own 7RT	O4IH	302	506	Co	TX	84.06	7x2¾x.21●	TL
10	Cowl...9RST-84	1280	158	158	14000	3836	6.50/20-6	7.50/20-8	Own 8RT	8-3 3/16x3¾	239	6.8	180	100-3800	3-2.49x5.2	N	Own 41T	4	Own 8T	SF	H	5.14-6.67	Own 7RT	O4IH	302	506	Co	TX	84.06	7-2¾x.21●	LT
11	Cowl...9H6T-84	1370	176	176	14000	3926	6.50/20-6	7.50/20-8	Own 7HT	6-3.3x4.4	226	6.8	180	95-3300	4-2.87x5.0	N	Own 41T	4	Own 8T	SF	H	5.14-6.67	Own 7RT	O4IH	302	506	Co	TX	102.2	7.08x2.79x¼	TL●
12	Cowl...9R6T-84	1401	176	176	14000	3966	6.50/20-6	7.50/20-8	Own 8RT	8-3 3/16x3¾	239	6.8	180	100-3800	3-2.49x5.2	N	Own 41T	4	Own 8T	SF	H	5.14-6.67	Own 7RT	O4IH	302	506	Co	TX	102.2	7.08x2.79x¼	TL●
	F-5 C.O.E.																														
13	Cab....9HOW-81	1605	110	110	14000	4346	6.50/20-6	7.50/20-8	Own 8HW	6-3.3x4.4	226	6.8	180	95-3300	4-2.87x5.0	N	Own 41T	4	Own 8T	SF	H	5.14-6.67	Own 7RW	O4IH	302	506	Co	TX	60.06	7x2¾x.21●	TL
14	Cab....9ROW-81	1635	110	110	14000	4386	6.50/20-6	7.50/20-8	Own 8RW	8-3 3/16x3¾	239	6.8	180	100-3800	3-2.49x5.2	N	Own 41T	4	Own 8T	SF	H	5.14-6.67	Own 7RW	O4IH	302	506	Co	TX	60.06	7x2¾x.21●	TL
15	Cab.....9HW-81	1635	134	134	14000	4476	6.50/20-6	7.50/20-8	Own 8HW	6-3.3x4.4	226	6.8	180	95-3300	4-2.87x5.0	N	Own 41T	4	Own 8T	SF	H	5.14-6.67	Own 7RW	O4IH	302	506	Co	TX	84.06	7.08x2.8x¼●	TL
16	Cab.....9RW-81	1665	134	134	14000	4516	6.50/20-6	7.50/20-8	Own 8RW	8-3 3/16x3¾	239	6.8	180	100-3800	3-2.49x5.2	N	Own 41T	4	Own 8T	SF	H	5.14-6.67	Own 7RW	O4IH	302	506	Co	TX	84.06	7.08x2.8x¼●	TL
17	Cab....9HSW-81	1665	158	158	14000	4546	6.50/20-6	7.50/20-8	Own 8HW	6-3.3x4.4	226	6.8	180	95-3300	4-2.87x5.0	N	Own 41T	4	Own 8T	SF	H	5.14-6.67	Own 7RW	O4IH	302	506	Co	TX	108.1	7.08x2.8x¼●	TL
18	Cab....9RSW-81	1695	158	158	14000	4586	6.50/20-6	7.50/20-8	Own 8RW	8-3 3/16x3¾	239	6.8	180	100-3800	3-2.49x5.2	N	Own 41T	4	Own 8T	SF	H	5.14-6.67	Own 7RW	O4IH	302	506	Co	TX	108.1	7.08x2.8x¼●	TL
	F-5 School Bus																														
19	Bus Cl. 9HST-84	1315	158	158	12000	3755	6.50/20-6	7.00/20-8	Own 7HT	6-3.3x4.4	226	6.8	180	95-3300	4-2.87x5.0	N	Own 41T	4	Own 8T	SF	H	5.14-6.67	Own 7RTH	O4IH	302	506	Co	TX	128♠	7x2¾x.21●	TL
20	Bus Cl. 9RST-84	1345	158	158	12000	3795	6.50/20-6	7.00/20-8	Own 8RT	8-3 3/16x3¾	239	6.8	180	100-3800	3-2.49x5.2	N	Own 41T	4	Own 8T	SF	H	5.14-6.67	Own 7RTH	O4IH	302	506	Co	TX	128♠	7x2¾x.21●	TL
21	Bus Cl. 9H4T-84	1530	194	194	15000	4260	7.50/20-8	8.25/20-10	Own 7HT	6-3.3x4.4	226	6.8	180	95-3300	4-2.87x5.0	N	Own 41T	4	Own 8T	SF	H	5.14-6.67	Own 7RTH	O4IH	302	506	Co	TX	164♠	7.08x2.8x¼●	TL
22	Bus Cl. 9R4T-84	1560	194	194	15000	4300	7.50/20-8	8.25/20-10	Own 8RT	8-3 3/16x3¾	239	6.8	180	100-3800	3-2.49x5.2	N	Own 41T	4	Own 8T	SF	H	5.14-5.67	Own 7RTH	O4IH	302	506	Co	TX	164♠	7.08x2.8x¼●	TL
	F-6																														
23	Cowl..9HTH-84	1610	134	134	16000	3976	7.50/20-8	8.25/20-10	Own 7HT	6-3.3x4.4	226	6.8	180	95-3300	4-2.87x5.0	N	Own 41T	4	Own 8TH	Hy	H	6.2-7.2	Own 7RTH	O4IHV	302	506	Co	TX	60.06	7.08x2.8x¼●	TL
24	Cowl..9RTH-84	1640	134	134	16000	4019	7.50/20-8	8.25/20-10	Own 8RT	8-3 3/16x3¾	239	6.8	180	100-3800	3-2.49x5.2	N	Own 41T	4	Own 8TH	Hy	H	6.2-7.2	Own 7RTH	O4IHV	302	506	Co	TX	60.06	7.08x2.8x¼●	TL
25	Cowl..9MTH-84	1665	134	134	16000	4024	7.50/20-8	8.25/20-10	Own 8MTH	6-3.5x4.4	254	6.8	212	110-3400	4-2.87x5.0	Y	Own 8MTH	4	Own 8TH	Hy	H	6.2-7.2	Own 7RTH	O4IHV	302	506	Co	TX	60.06	7.08x2.8x¼●	TL
26	Cowl 9HSTH-84	1640	158	158	16000	4049	7.50/20-8	8.25/20-10	Own 7HT	6-3.3x4.4	226	6.8	180	95-3300	4-2.87x5.0	N	Own 41T	4	Own 8TH	Hy	H	6.2-7.2	Own 7RTH	O4IHV	302	506	Co	TX	84.06	7.08x2.8x¼●	TL
27	Cowl 9MSTH-84	1707	158	158	16000	4074	7.50/20-8	8.25/20-10	Own 8MTH	6-3.5x4.4	254	6.8	212	110-3400	4-2.87x5.0	Y	Own 8MTH	4	Own 8TH	Hy	H	6.2-7.2	Own 7RTH	O4IHV	302	506	Co	TX	84.06	7.08x2.8x¼●	TL
28	Cowl. 9RSTH-84	1670	158	158	16000	4089	7.50/20-8	8.25/20-10	Own 8RT	8-3 3/16x3¾	239	6.8	180	100-3800	3-2.49x5.2	N	Own 41T	4	Own 8TH	Hy	H	6.2-7.2	Own 7RTH	O4IHV	302	506	Co	TX	84.06	7.08x2.8x¼●	TL
29	Cowl 9M6TH-84	1748	176	176	16000	4154	7.50/20-8	8.25/20-10	Own 8MTH	6-3.5x4.4	254	6.8	212	110-3400	4-2.87x5.0	Y	Own 8MTH	4	Own 8TH	Hy	H	6.2-7.2	Own 7RTH	O4IHV	302	506	Co	TX	102.3	7.08x2.8x¼●	TL
30	Cowl 9H6TH-84	1623	176	176	16000	4129	7.50/20-8	8.25/20-10	Own 7HT	6-3.3x4.4	226	6.8	180	95-3300	4-2.87x5.0	N	Own 41T	4	Own 8TH	Hy	H	6.2-7.2	Own 7RTH	O4IHV	302	506	Co	TX	102.3	7.08x2.8x¼●	TL
31	Cowl 9R6TH-84	1655	176	176	16000	4169	7.50/20-8	8.25/20-10	Own 8RT	8-3 3/16x3¾	239	6.8	180	100-3800	3-2.49x5.2	N	Own 41T	4	Own 8TH	Hy	H	6.2-7.2	Own 7RTH	O4IHV	302	506	Co	TX	102.3	7.08x2.8x¼●	TL
	F-6 C.O.E.																														
32	Cab. 9HOWH-81	1990	110	110	16000	4549	7.50/20-8	8.25/20-10	Own 8HW	6-3.3x4.4	226	6.8	180	95-3300	4-2.87x5.0	N	Own 41T	4	Own 8TH	Hy	H	6.2-7.2	Own 7RW	O4IHV	302	506	Co	TX	60.06	7x2¾x.21●	TL
33	Cab. 9ROWH-81	2020	110	110	16000	4589	7.50/20-8	8.25/20-10	Own 8RW	8-3 3/16x3¾	239	6.8	180	100-3800	3-2.49x5.2	N	Own 41T	4	Own 8TH	Hy	H	6.2-7.2	Own 7RW	O4IHV	302	506	Co	TX	60.06	7x2¾x.21●	TL
34	Cab 9MOWH-81	2059	110	110	16000	4574	7.50/20-8	8.25/20-10	Own 8MWH	6-3.5x4.4	254	6.8	210	106-3400	4-2.87x5.0	Y	Own 8MTH	4	Own 8TH	Hy	H	6.2-7.2	Own 7RW	O4IHV	302	506	...	TX	60.06	7x2¾x.21●	TL
35	Cab....9HWH-81	2020	134	134	16000	4679	7.50/20-8	8.25/20-10	Own 8HW	6-3.3x4.4	226	6.8	180	95-3300	4-2.87x5.0	N	Own 41T	4	Own 8TH	Hy	H	6.2-7.2	Own 7RW	O4IHV	302	506	Co	TX	84.06	7.08x2.8x¼●	TL
36	Cab....9RWH-81	2050	134	134	16000	4719	7.50/20-8	8.25/20-10	Own 8RW	8-3 3/16x3¾	239	6.8	180	100-3800	3-2.49x5.2	N	Own 41T	4	Own 8TH	Hy	H	6.2-7.2	Own 7RW	O4IHV	302	506	Co	TX	84.06	7.08x2.8x¼●	TL
37	Cab...9MWH-81	2091	134	134	16000	4704	7.50/20-8	8.25/20-10	Own 8MWH	6-3.5x4.4	254	6.8	210	106-3400	4-2.87x5.0	Y	Own 8MTH	4	Own 8TH	Hy	H	6.2-7.2	Own 7RW	O4IHV	302	506	...	TX	84.06	7.08x2.8x¼●	TL
38	Cab. 9HSWH-81	2050	158	158	16000	4749	7.50/20-8	8.25/20-10	Own 8HW	6-3.3x4.4	226	6.8	180	95-3300	4-2.87x5.0	N	Own 41T	4	Own 8TH	Hy	H	6.2-7.2	Own 7RW	O4IHV	302	506	Co	TX	108.1	7.08x2.8x¼●	TL
39	Cab. 9RSWH-81	2080	158	158	16000	4789	7.50/20-8	8.25/20-10	Own 8RW	8-3 3/16x3¾	239	6.8	180	100-3800	3-2.49x5.2	N	Own 41T	4	Own 8TH	Hy	H	6.2-7.2	Own 7RW	O4IHV	302	506	Co	TX	108.1	7.08x2.8x¼●	TL
40	Cab 9MSWH-81	2122	158	158	16000	4774	7.50/20-8	8.25/20-10	Own 8MWH	6-3.5x4.4	254	6.8	210	106-3400	4-2.87x5.0	Y	Own 8MTH	4	Own 8TH	Hy	H	6.2-7.2	Own 7RW	O4IHV	302	506	Co	TX	108.1	7.08x2.8x¼●	TL
	F-7																														
41	Cowl....9EQ-84	2685	135	135	19000	5478	8.25/20-10	9.00/20-10	Own 8EQ	8-3½x4⅜	337	6.4	255	145-3600	3-2.87x5.2	Y	Own 7EQ	5	Own 8Q	Hy	H	•• -6.8	Own 7EQ	O4IHV	444	697	Co	TX	61.06	9x3x.25†	T
42	Cowl...9E7Q-84	2861	147	147	19000	5528	8.25/20-10	9.00/20-10	Own 8EQ	8-3½x4⅜	337	6.4	255	145-3600	3-2.87x5.2	Y	Own 7EQ	5	Own 8Q	Hy	H	•• -6.8	Own 7EQ	O4IHV	444	697	Co	TX	73.06	9x3x.25†	T
43	Cowl...9E9Q-84	2735	159	159	19000	5648	8.25/20-10	9.00/20-10	Own 8EQ	8-3½x4⅜	337	6.4	255	145-3600	3-2.87x5.2	Y	Own 7EQ	5	Own 8Q	Hy	H	•• -6.8	Own 7EQ	O4IHV	444	697	Co	TX	85.06	9x3x.25†	T
44	Cowl...9E8Q-84	2913	178	178	19000	5748	8.25/20-10	9.00/20-10	Own 8EQ	8-3½x4⅜	337	6.4	255	145-3600	3-2.87x5.2	Y	Own 7EQ	5	Own 8Q	Hy	H	•• -6.8	Own 7EQ	O4IHV	444	697	Co	TX	104.1	9x3x.25†	T
45	Cowl...9E5Q-84	2785	195	195	19000	5808	8.25/20-10	9.00/20-10	Own 8EQ	8-3½x4⅜	337	6.4	255	145-3600	3-2.87x5.2	Y	Own 7EQ	5	Own 8Q	Hy	H	•• -6.8	Own 7EQ	O4IHV	444	697	Co	TX	121.1	9x3x.25†	T
	F-8																														
46	Cowl...9EQH-84	3155	135	135	22000	5934	9.00/20-10	10.0/20-12	Own 8EQ	8-3½x4⅜	337	6.4	255	145-3600	3-2.87x5.2	Y	Own 7EQH	5	Own 8QH	SF	H	•• -7.17	Own 7EQ	O4IHV	485	729	C	TX	61.06	9x3x.25†	T
47	Cowl. 9E7QH-84	3352	147	147	22000	5984	9.00/20-10	10.0/20-12	Own 8EQ	8-3½x4⅜	337	6.4	255	145-3600	3-2.87x5.2	Y	Own 7EQH	5	Own 8QH	SF	H	•• -7.17	Own 7EQ	O4IHV■	485	729	C	TX	73.06	9x3x.25†	T
48	Cowl. 9E9QH-84	3205	159	159	22000	6224	9.00/20-10	10.0/20-12	Own 8EQ	8-3½x4⅜	337	6.4	255	145-3600	3-2.87x5.2	Y	Own 7EQH	5	Own 8QH	SF	H	•• -7.17	Own 7EQ	O4IHV■	485	729	C	TX	85.06	9x3x.25†	T
49	Cowl. 9E8QH-84	3404	178	178	22000	6124	9.00/20-10	10.0/20-12	Own 8EQ	8-3½x4⅜	337	6.4	255	145-3600	3-2.87x5.2	Y	Own 7EQH	5	Own 8QH	SF	H	•• -7.17	Own 7EQ	O4IHV■	485	729	C	TX	104.1	9x3x.25†	T
50	Cowl. 9E5QH-84	3255	195	195	22000	6284	9.00/20-10	10.0/20-12	Own 8EQ	8-3½x4⅜	337	6.4	255	145-3600	3-2.87x5.2	Y	Own 7EQH	5	Own 8QH	SF	H	•• -7.17	Own 7EQ	O4IHV■	485	729	C	TX	121.1	9x3x.25†	T
51	Kenworth(D)....521	....	165	255	28000	12000	10.00/20	11.00/22	Cum HB6	6-4⅞x6	672	17	500	150-1800	7-4½x16 1/16	Y	BL 8241	4	Tim U200P	H2F	H	5.91-9.76	TimFe900DPA	Ws4IA	722	1174	a	TD	74	9⅛x3¼x 3/16	C
52	585	....	165	255	28000	9600	10.00/20	11.00/22	Wau 140GZ	6-4⅝x5½	554	6.4	450	188-2600	7-3x13 11/16	Y	Fu 5C650	5	Tim R100P	HF	H	5.29-7.40	TimFe900DPA	Ws4IA	648	1168	a	TD	64	9⅛x3¼x 3/16	C
53	Linn..........A-15	....	120	....	9000	6000	7.50/20S	8.25/20S	Her JXE3	6-3½x4¼	245	6.5	184	91-3200	7-2½x10 11/16	Y	WGT9	4	Own 601	N	N	None	Tim F30B28H	L4IH	306	478	a	T	....	None	....
54	..........A-25	....	156	....	11200	6200	7.50/20S	8.25/20	Her JXE3	6-3½x4¼	245	6.5	184	91-3200	7-2½x10 11/16	Y	WGT9	4	Own 601	N	N	None	Tim F30B28H	L4IH	306	478	a	X	....	None	....
55	..........A-35	....	169	....	14700	7900	7.50/20D	8.25/20	Her JXC	6-3¾x4¼	282	6.7	207	103-3200	7-2⅝x10 11/16	Y	WGT9	4	Own 602T	N	N	None	Tim F35	L6IH	486	744	a	X	....	None	....
56	..........A-45	....	205	....	16900	8100	7.50/20D	8.25/20	Her JXC	6-3¾x4¼	282	6.7	207	103-3200	7-2⅝x10 11/16	Y	WGT9	4	Own 602T	N	N	None	Tim F35	L6IH	486	744	a	X	....	None	....
57	Mar. Her...DVL-4	....	90	118	‡6750	......	7.50/16S	8.25/18S	Willys MB	4-3⅛x4⅜	134	6.4	105	60-4000	3-2.33x5.48	Y	Own	3	(Front Drive)	...	...	7.10	Own	4IH	202	327	M2	....	....	None	....
58	Peterbilt(D)....280	....	175	Opt	35000	12500	10.00/20D	11.00/22	Cum HB600	6-4⅞x6	672	17	500	150-1800	7-4½x16½	Y	Spl 8041	12	U-200P	2F	R	•• -6.42	TimFe900DPA	Ws4IA	738	1052	...	TD	86½	10⅝x3½x 3/16	CT
59	Reo.........E-19X	....	125	125	8000	4400▲	7.00/20S	8.25/20S	Own 245	6-3½x4¼	245	6.2	192	89-3100	7-2⅝x10.7	Y	WG T97	4	Tim 53547	SF	H	4.57-6.16	Tim 30000	LT4IH	310	482	var	TX	60⅝	8 11/16x2 11/16x 7/32	T
60	..........E-19A	....	125	125	16000	4950▲	7.50/20	8.25/20	Own 245	6-3½x4¼	245	6.2	192	89-3100	7-2⅝x10.7	Y	WG T97	4	Tim E100♦	HF	H	5.28-6.8	Tim 30000	LT4IVH	310	482	var	TX	60⅝	8 11/16x2 11/16x 7/32	T
61	..........E-19T	....	125	125	16000	5410▲	8.25/20	8.25/20	Own 245	6-3½x4¼	245	6.2	192	89-3100	7-2⅝x10.7	Y	WG T97	4	Tim E300	HFd	H	6.13-8.10	Tim 30000	LT4IVH	310	482	var	TX	60⅝	8 11/16x2 11/16x 7/32	T

▲—Includes cab. ♠—Cowl to axle. ♦—Two speed axle available.
■—Air brake equipment optional on F-8, Front 16x2¼, Rear 16½x5½.
‡—$200 for 8.25/18 tires.

●—Reinforcement 6.58x2.21x.125 extended to include front spring rear brackets and rear spring front bracket.
†—Reinforcement 8.5x2.56x.15 starts at front spring rear brackets and ends behind rear spring front brackets

For Directory of the Manufacturers listed above, see page 63.

CURRENT TRUCK SPECIFICATIONS — *Continued*

Line Number	Make and Model	Chassis List Price	Wheelbase: Minimum Standard	Wheelbase: Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	Tire Sizes (D-dual rear, S-single rear): Standard Front and Rear	Tire Sizes: Maximum Authorized Tire Size (Duals unless noted)	Engine: Make and Model	Engine: No. of Cylinders, Bore and Stroke	Engine: Displacement	Engine: Comp. Ratio	Engine: Torque lb. ft.	Engine: Max. Brake H.P. at R.P.M. Given	Engine: Main Bearings Number Diameter and Length	Governor Standard	Transmission: Make and Model	Forward Speeds	Rear Axle: Make and Model	Rear Axle: Gear and Type	Rear Axle: Drive & Torque	Rear Axle: Gear Ratio Range in High	Front Axle: Make and Model	Brakes, Service: Make Location Type Operation	Brakes: Lining Area	Brakes: Drum Area	Brakes: Drum Material	Brakes: Hand Location Type	C-A Dimensions (Min. Std. W. B.)	Frame: Side Rail Dimensions	Frame: Type
	Reo, Con't.																														
1	E-19B		150	150	16000	5035▲	7.50/20	8.25/20	Own 245	6-3½x4¼	245	6.2	192	89-3100	7-2⅝x10.7	Y	WG T97	4	Tim E100♦	HF	H	5.28-6.8	Tim 30000	LT4IVH	310	482	var	TX	85⅝	8 11/16x2 11/16x 3/16	T
2	E-19C		165	165	16000	5120▲	7.50/20	8.25/20	Own 245	6-3½x4¼	245	6.2	192	89-3100	7-2⅝x10.7	Y	WG T97	4	Tim E100♦	HF	H	5.28-6.8	Tim 30000	LT4IHV	310	482	var	TX	100⅝	8 11/16x2 11/16x 3/16	Tf
3	E-19L		187½	187½	16000	5250▲	8.25/20	8.25/20	Own 245	6-3½x4¼	245	6.2	192	89-3100	7-2⅝x10.7	Y	Cla 185F	4	Tim E100♦	HF	H	5.28-6.8	Tim 30000	LT4IVH	310	482	var	TX	123⅝	9x3x¼	T
4	E-21A		125	125	16500	5315▲	8.25/20	8.25/20	Own 292	6-3⅞x4⅛	292	6.5	224	124-3300	7-2½x9.408	Y	WG T97	4	Tim E100♦	HF	H	5.28-6.8	Tim 30000	LT4IVH	340	482	var	TX	60⅝	8 11/16x2 11/16x 3/16	T
5	E-21B		150	150	16500	5440▲	8.25/20	8.25/20	Own 292	6-3⅞x4⅛	292	6.5	224	124-3300	7-2½x9.408	Y	WG T97	4	Tim E100♦	HF	H	5.28-6.8	Tim 30000	LT4IVH	340	482	var	TX	85⅝	9x3x¼	T
6	E-21C		170	170	16500	5575▲	8.25/20	8.25/20	Own 292	6-3⅞x4⅛	292	6.5	224	124-3300	7-2½x9.408	Y	WG T97	4	Tim E100♦	HF	H	5.28-6.8	Tim 30000	LT4IVH	340	482	var	TX	105⅝	9x3x¼	T
7	E-21L		185	185	16500	5690▲	8.25/20	8.25/20	Own 292	6-3⅞x4⅛	292	6.5	224	124-3300	7-2½x9.408	Y	Cla 185F	4	Tim E100♦	HF	H	5.28-6.8	Tim 30000	LT4IVH	340	482	var	TX	120⅝	9x3x¼	Tf
8	E-21RA		130	130	19000	6165▲	9.00/20	9.00/20	Own 292	6-3⅞x4⅛	292	6.5	224	124-3300	7-2½x9.408	Y	Cla 205V	5	Tim H100△	HF	H	5.28-6.8	Tim 31104	LT4IVH	370	640	var	TX	65⅝	9x3x¼	T
9	E-21RT		130	130	19000	6740▲	9.00/20	9.00/20	Own 292	6-3⅞x4⅛	292	6.5	224	124-3300	7-2½x9.408	Y	Cla 205V	5	Tim H300△	HFd	H	6.67-8.85	Tim 31104	LT4IVH	370	640	var	TX	65⅝	9x3x¼	T
10	E-21RT		150	150	19000	6330▲	9.00/20	9.00/20	Own 292	6-3⅞x4⅛	292	6.5	224	124-3300	7-2½x9.408	Y	Cla 205V	5	Tim H100△	HF	H	5.28-6.8	Tim 31104	LT4IVH	370	640	var	TX	85⅝	9x3x¼	T
11	E-21RC		170	170	19000	6465▲	9.00/20	9.00/20	Own 292	6-3⅞x4⅛	292	6.5	224	124-3300	7-2½x9.408	Y	Cla 205V	5	Tim H100△	HF	H	5.28-6.8	Tim 31104	LT4IVH	370	640	var	TX	105⅝	9x3x¼	Tf
12	E-21RL		185	185	19000	6600▲	9.00/20	9.00/20	Own 292	6-3⅞x4⅛	292	6.5	224	124-3300	7-2½x9.408	Y	Cla 205V	5	Tim H100△	HF	H	5.28-6.8	Tim 31104	LT4IVH	370	640	var	TX	120⅝	9½x3 3/16x 3/16	Tf
13	E-22A		130	130	20000	6165▲	9.00/20	9.00/20	Own 331	6-4⅛x4⅛	331	6.4	264	140-3200	7-2½x9.408	Y	Cla 205V	5	Tim H100△	HF	H	5.28-6.8	Tim 31104	LT4IVH	370	640	var	TX	65⅝	9x3x¼	T
14	E-22T		130	130	20000	6740▲	9.00/20	9.00/20	Own 331	6-4⅛x4⅛	331	6.4	264	140-3200	7-2½x9.408	Y	Cla 205V	5	Tim H300	HFd	H	6.67-8.85	Tim 31104	LT4IVH	370	640	var	TX	65⅝	9x3x¼	T
15	E-22B		150	150	20000	6330▲	9.00/20	9.00/20	Own 331	6-4⅛x4⅛	331	6.4	264	140-3200	7-2½x9.408	Y	Cla 205V	5	Tim H100△	HF	H	5.28-6.8	Tim 31104	LT4IVH	370	640	var	TX	85⅝	9x3x¼	T
16	E-22C		170	170	20000	6465▲	9.00/20	9.00/20	Own 331	6-4⅛x4⅛	331	6.4	264	140-3200	7-2½x9.408	Y	Cla 205V	5	Tim H100△	HF	H	5.28-6.8	Tim 31104	LT4IVH	370	640	var	TX	105⅝	9x3x¼	Tf
17	E-22L		185	185	20000	6600▲	9.00/20	9.00/20	Own 331	6-4⅛x4⅛	331	6.4	264	140-3200	7-2½x9.408	Y	Cla 205V	5	Tim H100△	HF	H	5.28-6.8	Tim 31104	LT4IVH	370	640	var	TX	120⅝	9½x3 3/16x 3/16	Tf
18	E-22RA		130	130	22000	6705▲	10.00/20	10.00/20	Own 331	6-4⅛x4⅛	331	6.4	264	140-3200	7-2½x9.408	Y	Cla 205V	5	Tim L100△	HF	H	6.16-7.4	Tim 32500	LT4IVH	422	644	var	TX	65⅝	9x3x¼	T
19	E-22RT		130	130	22000	7205▲	10.00/20	10.00/20	Own 331	6-4⅛x4⅛	331	6.4	264	140-3200	7-2½x9.408	Y	Cla 205V	5	Tim L300△	HFd	H	6.32-8.22	Tim 32500	LT4IVH	422	644	var	TX	65⅝	9x3x¼	T
20	E-22RB		150	150	22000	6910▲	10.00/20	10.00/20	Own 331	6-4⅛x4⅛	331	6.4	264	140-3200	7-2½x9.408	Y	Cla 205V	5	Tim L100△	HF	H	6.16-7.4	Tim 32500	LT4IVH	422	644	var	TX	85⅝	9x3x¼	T
21	E-22RC		170	170	22000	7100▲	10.00/20	10.00/20	Own 331	6-4⅛x4⅛	331	6.4	264	140-3200	7-2½x9.408	Y	Cla 205V	5	Tim L100△	HF	H	6.16-7.4	Tim 32500	LT4IVH	422	644	var	TX	105⅝	9x3x¼	Tf
22	E-22RL		185	185	22000	7260▲	10.00/20	10.00/20	Own 331	6-4⅛x4⅛	331	6.4	264	140-3200	7-2½x9.408	Y	Cla 205V	5	Tim L100△	HF	H	6.16-7.4	Tim 32500	LT4IVH	422	644	var	TX	120⅝	9½x3 3/16x 3/16	Tf
23	E-22SA		130	130	24000	7630▲	10.00/20	11.00/20	Own 331	6-4⅛x4⅛	331	6.4	264	140-3200	7-2½x9.408	Y	Cla 290V	5	Tim Q100△	HF	H	5.28-7.8	Tim 35000	TWs4IA	638	934	var	TX	65⅝	9½x3 3/16x 3/16	T
24	E-22ST		130	130	24000	8090▲	10.00/20	11.00/20	Own 331	6-4⅛x4⅛	331	6.4	264	140-3200	7-2½x9.408	Y	Cla 290V	5	Tim Q300△	HFd	H	6.53-8.53	Tim 35000	TWs4IA	638	934	var	TX	65⅝	9½x3 3/16x 3/16	T
25	E-22SB		150	150	24000	7810▲	10.00/20	11.00/20	Own 331	6-4⅛x4⅛	331	6.4	264	140-3200	7-2½x9.408	Y	Cla 290V	5	Tim Q100△	HF	H	5.28-7.8	Tim 35000	TWs4IA	638	934	var	TX	85⅝	9½x3 3/16x 3/16	T
26	E-22SC		170	170	24000	7995▲	10.00/20	11.00/20	Own 331	6-4⅛x4⅛	331	6.4	264	140-3200	7-2½x9.408	Y	Cla 290V	5	Tim Q100△	HF	H	5.28-7.8	Tim 35000	TWs4IA	638	934	var	TX	105⅝	9½x3 3/16x 3/16	Tf
27	E-22SL		185	185	24000	8150▲	10.00/20	11.00/20	Own 331	6-4⅛x4⅛	331	6.4	264	140-3200	7-2½x9.408	Y	Cla 290V	5	Tim Q100△	HF	H	5.28-7.8	Tim 35000	TWs4IA	638	934	var	TX	120⅝	9½x3 3/16x 3/16	Tf
28	E-23SA		130	130	24000	7190▲	9.00/20	10.00/20	Con T6371	6-4⅛x4⅝	371	5.8	294	126-2600	7-2⅝x13.6	Y	Cla 270V	5	Tim L100△	HF	H	6.16-7.4	Tim 32500	LT4IVH	422	644	var	TX	65⅝	9½x3 3/16x 3/16	T
29	E-23ST		130	130	24000	7490▲	9.00/20	10.00/20	Con T6371	6-4⅛x4⅝	371	5.8	294	126-2600	7-2⅝x13.6	Y	Cla 270V	5	Tim L100△	HF	H	6.16-7.4	Tim 32500	LT4IVH	422	644	var	TX	65⅝	9½x3 3/16x 3/16	T
30	E-23SB		150	150	24000	7335▲	9.00/20	10.00/20	Con T6371	6-4⅛x4⅝	371	5.8	294	126-2600	7-2⅝x13.6	Y	Cla 270V	5	Tim L100△	HF	H	6.16-7.4	Tim 32500	LT4IVH	422	644	var	TX	85⅝	9½x3 3/16x 3/16	T
31	E-23SC		170	170	24000	7505▲	9.00/20	10.00/20	Con T6371	6-4⅛x4⅝	371	5.8	294	126-2600	7-2⅝x13.6	Y	Cla 270V	5	Tim L100△	HF	H	6.16-7.4	Tim 32500	LT4IVH	422	644	var	TX	105⅝	9½x3 3/16x 3/16	Tf
32	E-23SL		185	185	24000	7650▲	9.00/20	10.00/20	Con T6371	6-4⅛x4⅝	371	5.8	294	126-2600	7-2⅝x13.6	Y	Cla 270V	5	Tim L100△	HF	H	6.16-7.4	Tim 32500	LT4IVH	422	644	var	TX	120⅝	9½x3 3/16x 3/16	Tf
33	E-23A		130	130	24000	7630▲	10.00/20	10.00/20	Con T6427	6-4 7/16x4⅝	427	5.9	338	145-2600	7-2⅝x13.6	Y	Cla 270V	5	Tim L100△	HF	H	6.16-7.4	Tim 32500	TWs4IA	514	644	var	TX	65⅝	9½x3 3/16x 3/16	T
34	E-23T		130	130	24000	8120▲	10.00/20	10.00/20	Con T6427	6-4 7/16x4⅝	427	5.9	338	145-2600	7-2⅝x13.6	Y	Cla 270V	5	Tim L100△	HF	H	6.16-7.4	Tim 32500	TWs4IA	514	644	var	TX	65⅝	9½x3 3/16x 3/16	T
35	E-23B		150	150	24000	7790▲	10.00/20	10.00/20	Con T6427	6-4 7/16x4⅝	427	5.9	338	145-2600	7-2⅝x13.6	Y	Cla 270V	5	Tim L100△	HF	H	6.16-7.4	Tim 32500	TWs4IA	514	644	var	TX	85⅝	9½x3 3/16x 3/16	T
36	E-23C		170	170	24000	7950▲	10.00/20	10.00/20	Con T6427	6-4 7/16x4⅝	427	5.9	338	145-2600	7-2⅝x13.6	Y	Cla 270V	5	Tim L100△	HF	H	6.16-7.4	Tim 32500	TWs4IA	514	644	var	TX	105⅝	9½x3 3/16x 3/16	Tf
37	E-23L		185	185	24000	8090▲	10.00/20	10.00/20	Con T6427	6-4 7/16x4⅝	427	5.9	338	145-2600	7-2⅝x13.6	Y	Cla 270V	5	Tim L100△	HF	H	6.16-7.4	Tim 32500	TWs4IA	514	644	var	TX	120⅝	9½x3 3/16x 3/16	Tf
38	E-23RA		130	130	26000	8020▲	10.00/20	11.00/20	Con T6427	6-4 7/16x4⅝	427	5.9	338	145-2600	7-2⅝x13.6	Y	Cla 270V	5	Tim Q100△	HF	H	5.28-7.8	Tim FD900	TWs4IA	620	928	var	TX	65⅝	9½x3 3/16x 3/16	T
39	E-23RT		130	130	26000	8480▲	10.00/20	11.00/20	Con T6427	6-4 7/16x4⅝	427	5.9	338	145-2600	7-2⅝x13.6	Y	Cla 270V	5	Tim Q100△	HF	H	5.28-7.8	Tim FD900	TWs4IA	620	928	var	TX	65⅝	9½x3 3/16x 3/16	T
40	E-23RB		150	150	26000	8175▲	10.00/20	11.00/20	Con T6427	6-4 7/16x4⅝	427	5.9	338	145-2600	7-2⅝x13.6	Y	Cla 270V	5	Tim Q100△	HF	H	5.28-7.8	Tim FD900	TWs4IA	620	928	var	TX	85⅝	9½x3 3/16x 3/16	T
41	E-23RC		170	170	26000	8360▲	10.00/20	11.00/20	Con T6427	6-4 7/16x4⅝	427	5.9	338	145-2600	7-2⅝x13.6	Y	Cla 270V	5	Tim Q100△	HF	H	5.28-7.8	Tim FD900	TWs4IA	620	928	var	TX	105⅝	9½x3 3/16x 3/16	Tf
42	E-23RL		185	185	26000	8520▲	10.00/20	11.00/20	Con T6427	6-4 7/16x4⅝	427	5.9	338	145-2600	7-2⅝x13.6	Y	Cla 270V	5	Tim Q100△	HF	H	5.28-7.8	Tim FD900	TWs4IA	620	928	var	TX	120⅝	9½x3 3/16x 3/16	Tf
43	30A		145	145	32000	11280▲	11.00/20	11.00/24	Con R6513	6-4½x5⅜	513	5.8	392	167-2600	7-3¼x14.7	Y	Spi 6252A	5	Tim S300△	HFd	H	6.42-8.38	Tim 36000	TWs4IA	722	1038	var	TI	67½	10¼x3½x⅝	T
44	30B		165	165	32000	11360▲	11.00/20	11.00/24	Con R6513	6-4½x5⅜	513	5.8	392	167-2600	7-3¼x14.7	Y	Spi 6252A	5	Tim U200△	HFd	H	7.08	Tim 36000	TWs4IA	722	1038	var	TI	87½	10¼x3½x⅝	T
45	31A		145	145	32000	11280▲	11.00/20	11.00/24	Con R6602	6-4⅞x5⅜	602	5.8	456	194-2600	7-3¼x14.7	Y	Spi 6252A	5	Tim S300△	HFd	H	6.42-8.38	Tim 36000	TWs4IA	722	1038	var	TI	67½	10¼x3½x⅝	T
46	31B		165	165	32000	11360▲	11.00/20	11.00/24	Con R6602	6-4⅞x5⅜	602	5.8	456	194-2600	7-3¼x14.7	Y	Spi 6252A	5	Tim U200△	HFd	H	7.08	Tim 36000	TWs4IA	722	1038	var	TI	87½	10¼x3½x⅝	T
47	Sterling HD97		148	175	24000	9150	9.00/20	11.00/20	Wau 6MZA	6-4¼x4¾	404	5.6	290	130-3000	7-2⅝x12½	Y	Fu 5A43	5	Tim Q100DPH	FHy	R	5.29-7.80	Tim 35011H	T4IHV	524	926	A	TX	67	9x7x¼	A
48	HD105		148	175	24000	9550	10.00/20	11.00/22	Wau 6MZA	6-4¼x4¾	404	5.6	290	130-3000	7-2⅝x12½	Y	Fu 5A43	5	Tim R100DPH	FHy	R	5.29-7.40	Tim 35011H	T4IHV	524	926	A	TX	67	9x3½x¼	A
49	HD115		148	175	32000	10650	10.00/20	11.00/24	Wau 6SRKR	6-4⅝x5⅛	517	5.5	368	125-2250	7-3x13¾	Y	Fu 5A62	5	Tim S200P	2F	R	6.42-9.83	Tim 36000TW	Ws4IA	722	1054	A	TX	67	9x3½x¼	A
50	HD145		148	175	36000	11250	11.00/20	12.00/24	Wau 6SRKR	6-4⅝x5⅛	517	5.5	368	125-2250	7-3x13¾	Y	Fu 5A62	5	Tim 79721W	2F	R	7.69-11.36	Tim 36000TW	Ws4IA	670	1118	A	TX	67	9¼x3⅝x⅜	A
51	(D) HD115H		158	185	32000	11950	10.00/20	11.00/24	Cum HB600	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	Fu 4B86	4	Tim S200P	2F	R	6.42-9.83	Tim 36000TW	Ws4IA	722	1054	A	TX	68	9x3½x¼	A
52	(D) HD145H		158	185	36000	12550	11.00/20	12.00/24	Cum HB600	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	Fu 4B86	4	Tim 79721W	2F	R	7.69-11.36	Tim 36000TW	Ws4IA	670	1118	A	TX	68	9¼x3⅝x⅜	A
53	HC97		148	175	24000	9200	9.00/20	11.00/20	Wau 6MZA	6-4¼x4¾	404	5.6	290	130-3000	7-2⅝x12½	Y	Fu 5A43	5	Own 97H	CD	R	6.70-10.82	Tim 35011H	T4IHV	518	852	A	TX	67	9x7x¼	A
54	HC105		148	175	28000	9700	10.00/20	11.00/22	Wau 6MZA	6-4¼x4¾	404	5.6	290	130-3000	7-2⅝x12½	Y	Fu 5A43¶	15	Own 137H	CD	R	6.70-10.82	Tim 35011H	TL4IHV	540	842	A	TX	67	9x3½x¼	A
55	HC115		148	175	32000	10350	10.00/20	11.00/24	Wau 6SRKR	6-4⅝x5⅛	517	5.5	368	125-2250	7-3x13¾	Y	Fu 5A62¶	15	Own 137W	CD	R	6.70-10.82	Tim 36000TW	Ws4IA	648	1064	A	TX	67	9x3½x¼	A
56	HC144		148	175	36000	11250	10.00/22	12.00/24	Wau 6SRKR	6-4⅝x5⅛	517	5.5	368	125-2250	7-3x13¾	Y	Fu 5A62¶	15	Own 148W	CD	R	6.70-10.82	Tim 36000TW	Ws4IA	708	1102	A	TX	67	9¼x3⅝x⅜	A
57	HC147		148	175	36000	11500	10.00/22	12.00/24	Wau 6SRKR	6-4⅝x5⅛	517	5.5	368	125-2250	7-3x13¾	Y	Fu 5A62¶	15	Own 147W	CD	R	6.70-10.82	Tim 36000TW	Ws4IA	708	1102	A	TX	67	9¼x3⅝x⅜	A
58	HC175		167	185	45000	14600	12.00/24†	14.00/24‡	Wau 145GK	6-5¼x6	779	6.2	585	186-2100	7-3½x17¾	Y	Fu 4B86●	12	Own 175W	CD	R	7.31-12.42	Tim 27454W	Ws4IA	786	1212	A	TX	77	9¼x3⅝x⅜	A
59	HC250		178	190	60000	18400	14.00/24‡	14.00/24‡	Wau 145GK	6-5¼x6	779	6.2	585	186-2100	7-3½x17¾	Y	Fu 4B86●	12	Own 251W	CD	R	7.31-12.42	Tim 27454W	Ws4IA	786	1212	A	JX	95	12x3½x⅜	AL
60	(D) HC115H		167	185	32000	12250	10.00/20	11.00/24	Cum HB600	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	Fu 4B86●	12	Own 137W	CD	R	6.70-10.82	Tim 36000TW	Ws4IA	648	1064	A	TX	77	9x3½x¼	A
61	(D) HC175H		167	185	45000	14930	12.00/24†	14.00/24‡	Cum HBD600	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	Fu 4B86●	12	Own 175W	CD	R	7.31-12.42	Tim 27454W	Ws4IA	786	1212	A	TX	77	9¼x3⅝x⅜	A
62	(D) HC250H		178	190	60000	18700	14.00/24‡	14.00/24‡	Cum HBD600	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	Fu 4B86●	12	Own 251W	CD	R	7.31-12.42	Tim 27454W	Ws4IA	786	1212	A	JX	95	12x3½x⅜	AL
63	Studebaker 2R5	1022	112	112	4600	2125	6.00/16S	6.50/16S	Own 1R	6-3x4	170	7.0	138	85-4000	4-2 1/16x5 1/16	N	Own 673519	3	Own 673874	Hy	H	**-4.82	Own 677574	Wg4IH	170	276	CO	2I	40	7x2½x⅛	T
64	2R10	1088	122	122	6100	2400	6.50/16S	7.50/16S	Own 1R	6-3x4	170	7.0	138	85-4000	4-2 1/16x5 1/16	N	Own 673519	3	Own 677806	SF	H	5.57-4.86	Own 677574	Wg4IH	198	314	CO	2I	50	7 3/16x2 3/16x 3/16	T
65	2R15-21	1236	121	121	7800	3005	7.00/17S	7.00/20	Own 2R	6-3x4	170	7.0	138	85-4000	4-2 1/16x5 1/16	N	Own 676044	4	Own 677768	SF	H	5.83-6.66	Own 677091	LH4IH	226	342	Ce	TX	50½	8x2 11/16x 3/16	T
66	2R15-31	1255	131	131	10000	3065	7.00/17S	7.00/20	Own 2R	6-3x4	170	7.0	138	85-4000	4-2 1/16x5 1/16	N	Own 676044	4	Own 677768	SF	H	5.83-6.66	Own 677091	LH4IH	226	342	Ce	TX	60½	8 3/16x2¼x 3/16	T
67	2R16	1291	131	195	14000	3695	6.50/20D	8.25/20	Own 3R	6-3 5/16x4⅜	226	6.5	174	94-3400	4-2⅛x5 11/16	N	Own 676045	4	Own 675732♦♦	SF	H	6.66-5.66	Own 674484	LH4IH	294	442	Ce	TX	60½	8½x2 11/16x 3/16	T
68	2R16A	1326	131	195	14000	3695	6.50/20 D	8.25/20	Own 4R	6-3 5/16x4¾	245	7.0	205	102-3200	4-2⅜x5	N	Own 678790	4	Own 675732▼	SF	H	6.66-5.83	Own 674484	LH4IH	294	442	Ce	TX	60½	8½x2 11/16x 3/16	T
69	2R17	1592	131	195	16000	4180	7.50/20D	8.25/20	Own 3R	6-3 5/16x4⅜	226	6.5	174	94-3400	4-2⅛x5 11/16	Y	Own 676045	4	Own 675571♦♦	Hy	H	6.80-....	Own 674484	LH4IH	367	553	Ce	TX	60½	8½x2 11/16x 3/16	P
70	2R17A	1627	131	195	16000	4180	7.50/20 D	9.00/20	Own 4R	6-3 5/16x4¾	245	7.0	205	102-3200	4-2⅜x5	N	Own 678794	4	Own 675571♦♦	Hy	H	6.80-6.20	Own 674484	LH4IH	367	553	Ce	TX	60½	8½x2 11/16x 3/16	P

▲ Includes Cab.
♦—Two speed axle available.
¶ Auxiliary Transmission Own OJ.
‡ Rear only: Front 12.00/24.
● Auxiliary transmission Own FJ.
♦♦—Two speed 6.13-8.10 optional.
▼—Two speed 6.13-8.19 and H.D. 6.20-6.80 optional.
△—Double reduction and 2-speed available.
† Rear only: Front 11.00/24.

For Directory of the Manufacturers listed above, see page 63.

CURRENT TRUCK SPECIFICATIONS — Continued

Line Number	Make and Model	Chassis List Price	Wheelbase: Minimum Standard	Wheelbase: Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	Tire Sizes (D-dual rear, S-single rear): Standard Front and Rear	Tire Sizes: Maximum Authorized Tire Size (Duals unless noted)	Engine: Make and Model	Engine: No. of Cylinders, Bore and Stroke	Engine: Displacement	Engine: Comp. Ratio	Engine: Torque lb. ft.	Engine: Max. Brake H.P. at R.P.M. Given	Engine: Main Bearings Number Diameter and Length	Governor Standard	Transmission: Make and Model	Forward Speeds	Rear Axle: Make and Model	Rear Axle: Gear and Type	Rear Axle: Drive & Torque	Rear Axle: Gear Ratio Range in High	Front Axle: Make and Model	Brakes Service: Make Location Type Operation	Brakes Service: Lining Area	Brakes Service: Drum Area	Brakes Service: Drum Material	Brakes: Hand Location Type	C-A Dimensions (Min. Std. W. B.)	Frame: Side Rail Dimensions	Frame: Type
1	Ward La Fr. D-1	....	149	220	25000▲	9500	10.00/20	11.00/20	Con T6427	6-4 7/16x4 5/8	427	5.1	340	152-2600	7-2 3/4x13 1/2	Y	Ful 5A430	5	Tim Q-100	B	R	••-6.83	Tim 35017TW	Ws4A	600	928	C	TM	68 3/4	9 1/2x3x1/4	T
2	D-1C	....	149	220	29000▲	9500	11.00/20	11.00/22	Con T6427	6-4 7/16x4 5/8	427	5.1	340	152-2600	7-2 3/4x13 1/2	Y	Ful 5A430	5	Tim S-200	82	R	••-7.08	Tim 35017TW	Ws4A	673	1031	C	TM	68 3/4	9 1/2x3x1/4	T
3	D-2K	....	149	220	29000▲	10000	11.00/20	11.00/22	Wau 140GK	6-4 1/2x5 1/2	525	6.4	425	168-2400	7-2 3/4x13	Y	Ful 5A620	5	Tim S-200	82	R	••-7.84	Tim 35017TW	Ws4A	673	1031	C	TM	68 3/4	10x3 1/2x3/16	T
4	D-2Z	....	149	220	29000▲	10000	11.00/20	11.00/20	Wau 140GZ	6-4 5/8x5 1/2	554	6.4	456	184-2400	7-3 1/4x13 7/8	Y	Ful 5C650	5	Tim S-200	82	R	••-7.84	Tim 35017TW	Ws4A	673	1031	C	TM	68 3/4	10x3 1/2x3/16	T
5	D-3	....	149	220	29000▲	10000	11.00/20	11.00/22	Con R6572	6-4 3/4x5 3/8	572	5.9	440	189-2600	7-3 1/4x14 1/2	Y	Ful 5C650	5	Tim S-200	82	R	••-7.84	Tim 35017TW	Ws4B	673	1031	C	TM	68 3/4	10x3 1/2x3/16	T
6	D-38	....	149	220	29000▲	10000	11.00/20	11.00/22	Con R6602	6-4 7/8x5 3/8	602	5.9	463	198-2600	7-3 1/4x14 1/2	Y	Ful 5C650	5	Tim S-200	82	R	••-7.84	Tim 35017TW	Ws4B	673	1031	C	TM	68 3/4	10x3 1/2x3/16	T
7	(D) D-5	....	149	220	35000▲	12500	11.00/22	11.00/22	Cum HB600	6-4 7/8x6	672	17	500	150-1800	7-4 1/2x16 3/4	Y	Ful 5C650	5	Tim U-200	82	R	••-6.42	Tim 27463	Ws4B	681	1041	C	TM	68 3/4	10x3 1/2x3/16	T
8	Willys (Sd.Del.) 463	1295*	104	104	4000	*2752	6.50/15S	....	Own 463	4-3 1/8x4 3/8	134	6.5	105	63-4000	3-2.33x5.48	N	WG T96	3	Spl 23-1	Hy♦	H	4.88-5.38	Own I Tr	B4IH	133	220	a	2I	.....	5x2 1/4x.063	TfD
9	Willys 2WD	1295*	118	118	5300	*2788	6.50/16S‡	7.00/16S	Own 2WD	4-3 1/8x4 3/8	134	6.5	105	60-4000	3-2.33x5.48	N	WG T90E	3	Tim51540NX4	S♦	H	5.38-6.17	Cla F-154	B4IH	176	276	a	2I	42.28	5 1/2x2x3/16	TD
	Four-Wheel-Drive																														
10	Coleman G-55	....	136	150	30000	11750	11.00/20	12.00/20	Buda LO-525	6-4 1/2x5 1/2	525	6.7	400	150-2200	7-3x7 3/4	Y	Fu 5A650	5	OW-C375FXa	.....		9.66	OW	TW 1A	598	9214	...	FD	96	9x4x1/4	C
11	Corbitt 22FG	....	150	Opt	22000	......	9.00/20	10.00/20	Con B6371	6-4 1/4x4 3/8	371	6.0	280	100-2800	7-2 1/2x13 1/2	Y	Fu 5A43	5	Tim R2090H	2F	H	••-8.43	Tim F2090H	L4IHV	...	868	a	FD	74	9x3x1/4	DL
12	Dodge B-2-PW	....	126	126	8700	......	6.00/16-8	9.00/16-8	Own T-137	6-3 1/4x4 5/8	230	6.7	186	94-3200	4-2 1/2x4.8	Y	NP-88790	4	Own T-137	HyF	H	4.89-5.83	Own T-137	O4IH	210	311	Co	TX	52 [illegible]	[illegible]	C
13	FWD HA	....	132	168	......	▲7470	8.25/20D	10.00/20	Wau BZ	6-4x4 1/4	320	6.0	237	105-3000	7-2 1/4x10 1/4	Y	Own H	5	Own H	SF	H	6.6-9.01	Own H	L4IHV	391	807	a	T4	79 1/2	9x3x1/4	T
14	HR	....	132	168	......	▲8000	9.00/20	10.00/20	Wau MZA	6-4 1/4x4 3/4	404	5.6	291	129-2800	7-2 3/4x12 1/2	Y	Own H	5	Own H	SF	H	6.6-9.01	Own H	L4IHV	391	807	a	T4	79 1/2	9x3x1/4	T
15	HG	....	154	154	......	▲8050	9.00/20	10.00/20	Wau MZA	6-4 1/4x4 3/4	404	5.6	291	129-2800	7-2 3/4x12 1/2	Y	Own H	5	Own H	SF	H	6.6-9.01	Own H	L4IHV	391	807	a	T4	89 3/4	7 3/16x3x[illegible]	C
16	SU	....	150	182	......	▲10570	11.00/20D	12.00/20	Wau SRKR	6-4 5/8x5 1/8	517	5.5	369	126-2400	7-3x13 1/2	Y	Own U	5	Own U	BF	H	6.7-9.8	Own U	L4IHV	512	985	a	T4	90	8 3/16x3x[illegible]	C
17	YU	....	150	182	......	▲11570	11.00/20D	12.00/20	Wau 140GK	6-4 1/2x5 1/2	525	6.1	425	142-2250	7-3 1/4x13	Y	Own S	5	Own YU	SF	H	5.7-10.8	Own YU	Wg4IHV	539	804	a	T4	90	8 3/16x3x[illegible]	C
18	ZU	....	150	182	......	▲12540	11.00/20D	12.00/20	Wau 140GZ	6-4 5/8x5 1/2	554	6.4	460	188-2600	7-3 1/4x13	Y	Own S	5	Own ZU	SF	H	6.6-11.4	Own ZU	Wg4IHV	640	1106	a	T4	90	10 3/16x3x[illegible]	C
19	M7G	....	150	180	......	▲15500	12.00/20D	12.00/24	Wau 145GK	6-5 1/4x6	779	6.2	590	186-2000	7-3 1/2x17 3/4	Y	Own M	10	Tim 1758W	2F	H	5.9-8.8	Wis F409W	WW4IA	644	1090	a	T4	90	10 3/16x3x[illegible]	C
20	(D) M7D	....	150	180	......	▲16100	12.00/20D	12.00/24	Bu DC844	6-5 1/4x6 1/2	844	...	605	180-1800	7-3 3/4x17	Y	Own M	10	Tim 1758W	2F	H	5.9-8.8	Wis F409W	WW4IA	644	1090	a	T4	90	10 3/16x3x[illegible]	C
21	M10G	....	150	180	......	▲15800	11.00/24D	12.00/24	Wau 145GK	6-5 1/4x6	779	6.2	590	186-2000	7-3 1/2x17 3/4	Y	Own M	10	Tim 79721W	2F	H	6.7-9.2	WisF408CWXI	WW4IA	693	1144	a	T4	90	10 3/16x3x[illegible]	C
22	(D) M10D	....	150	180	......	▲16400	11.00/24D	12.00/24	Bu DC844	6-5 1/4x6 1/2	844	...	605	180-1800	7-3 3/4x17	Y	Own M	10	Tim 79721W	2F	H	6.7-9.2	WisF408CWXI	WW4IA	693	1144	a	T4	90	10 3/16x3x[illegible]	C
23	Marmon-Herr MH440-4	....	158	170	24000	▲9800	9.00/20D	10.00/20	Her WXLC3	6-4 1/4x4 3/4	404	5.4	293	118-2800	7-2 3/4x13 1/4	Y	Fu-MH31	5	Own 1121	2B	H	••-8.43	Own 121	W....A	584	887	e	F	72	9 [illegible]x3x1/4	T
24	MH-RC 4	....	161	....	26000	10550	9.00/20	10.00/20	Her RXC	6-4 5/8x5 1/4	529	6.3	390	131-2200	7-3x13 1/4	Y	Fu	5	Own 1121	2B	H	••-8.43	Own 121	W....A	584	.....		F	72	9 [illegible]x3x1/4	T
25	MH555-4	....	161	173	30000▲	11550	10.00/20D	11.00/20	Her RXC	6-4 5/8x5 1/4	529	6.3	390	131-2200	7-3x13 1/4	Y	Fu-MH33	5	Own 1122	2B	H	••-8.15	Own 122	W....A	692	1039	e	F	72	10 3/16x3x3/16	T
26	MH-RH 4	....	161	....	33000	11980	10.00/20	11.00/20	Her RXLDH	6-4 3/4x5 1/4	558	6.1	440	180-2600	7-3x13 1/4	Y	Fu	5	Own 1122	2B	H	••-8.15	Own 122	W....A	696	.....		F	72	10 3/16x3x3/16	T
27	(C) R5-4	....	134	134	15500	▲5100	7.50/20D	7.50/20	Ford	8-3 3/16x3 3/4	239	6.4	180	100-3800	3-2 1/2x4.71	N	Ford	4	Ford	S	H	••-6.67	Own M5	F....H	303	563	a	F	60 3/16	7x2 3/4x[illegible]	T
28	(C) R6-4	....	158	158	15500	▲5331	7.50/20D	7.50/20	Ford	8-3 3/16x3 3/4	239	6.4	180	100-3800	3-2 1/2x4.71	N	Ford	4	Ford	S	H	••-6.67	Own M5	F....H	303	563	a	F	84 3/16	7x2 3/4x[illegible]	T
29	(C) LD7-4	....	114	....	5300	▲3500	15"	15"	Ford	8-3 3/16x3 3/4	239	6.4	180	100-3800	3-2 1/2x4.71	N	Ford	4	Ford	S	H	••-4.11	Own O	F....H	162	....	A	F	40 3/16	5 [illegible]x2 1/4x[illegible]	T
30	(C) R3-4	....	122	....	6800	▲4100	7.50/17	7.50/17	Ford	8-3 3/16x3 3/4	239	6.4	180	100-3800	3-2 1/2x4.71	N	Ford	4	Ford	S	H	••-4.86	Own I	F....H	186	....	A	F	48	6x2 1/4x[illegible]	T
31	(C) R4-4	....	134	....	10000	▲4900	7.00/20S	7.00/20	Ford	8-3 3/16x3 3/4	239	6.4	180	100-3800	3-2 1/2x4.71	N	Ford	4	Ford	S	H	••-5.33	Own	F....H	303	563	A	F	60 3/16	7x2 3/4x[illegible]	T
32	(C) R5-A-COE4	....	110	158	14000	▲5360	7.50/20D	7.50/20	Ford	8-3 3/16x3 3/4	239	6.4	180	100-3800	3-2 1/2x4.71	N	Ford	4	Ford	S	H	••-6.67	Own	F....H	303	563	A	F	60 3/16	7.08x2.8x1/4	T
33	(C) Q5-4	....	136	....	21500	▲7100	9.00/20	10.00/20	Ford	8-3 1/2x4 3/8	337	6.4	255	145-3600	3-2 1/4x5.21	Y	Ford	5	Ford	H	H	6.80	Own	F....H	350	583	A	F	61	9x3x1/4	T
34	(C) Q6-4	....	160	....	21500	▲7200	9.00/20	10.00/20	Ford	8-3 1/2x4 3/8	337	6.4	255	145-3600	3-2 1/4x5.21	Y	Ford	5	Ford	H	H	••-6.80	Own	F....H	350	583	A	F	85	9x3x1/4	T
35	Q7-4	....	196	....	21500	▲7350	9.00/20	10.00/20	Ford	8-3 1/2x4 3/8	337	6.4	255	145-3600	3-2 1/4x5.21	Y	Ford	5	Ford	H	H	••-6.80	Own	F....H	350	583	A	F	85	9x3x1/4	T
36	Q5-L4	....	148	....	21500	7150	9.00/20	10.00/20	Ford	8-3 1/2x4 3/8	337	6.4	255	145-3600	3-2 1/4x5.21	Y	Ford	5	Ford	H	H	••-6.80	Own	F....H	350	583	A	F	85	8x3x1/4	T
37	Q6-L4	....	179	....	21500	7275	9.00/20	10.00/20	Ford	8-3 1/2x4 3/8	337	6.4	255	145-3600	3-2 1/4x5.21	Y	Ford	5	Ford	H	H	••-6.80	Own	F....H	350	583	A	F	85	9x3x1/4	T
38	Oshkosh W-212	....	144	159	21000▲	8500	9.00/20D	9.00/20	Her JXLD	6-4x4 1/4	339	...	272	130-3000	7-2 1/2x10 [illegible]	Y	Fu 5A43	5	Own W212	SF	H	••-7.2	Own W212	W4IHDV	400	665	Co	PX	82	8x3x1/4	Tf
39	W-312	....	149	205	25000▲	10200	10.00/20D	11.00/20	Her WXLCO3	6-4 1/4x4 3/4	404	...	312	139-2600	7-2 3/4x13 1/4	Y	Fu 5A43	5	Own W312	SF	H	••-6.8	Own W312	W4IHDV	510	876	G	PX	82	8 1/4x3x5/16	TF
40	W1700	....	150	205	28000▲	11000	11.00/20D	12.00/20S	Her RXC	6-4 5/8x5 1/4	529	...	395	131-2200	7-3x13 1/4	Y	Fu 5A620	5	Own W1700	SF	H	••-6.4	Own 1700	W4IHDV	570	980	G	PX	82	8 1/4x3x5/16	TF
41	W-700	....	150	205	30000▲	12000	11.00/20D	12.00/20	Her RXCO	6-4 5/8x5 1/4	529	...	395	131-2200	7-3x12 3/4	Y	Fu 5A650	10	Own W700	2F	H	••-6.8	Own W700	L4IHV	630	975	G	PX	82	10 1/4x3x5/16	TF
42	(D) W-703D	....	150	205	30000▲	12700	11.00/20D	12.00/20	Her DRXC	6-4 5/8x5 1/4	529	...	398	147-2200	7-3 1/4x13 1/4	Y	Fu 5A650	10	Own W700	2F	H	••-6.8	Own W700	L4IHV	630	975	G	PX	82	10 1/4x3x5/16	TF
43	W-703	....	150	205	30000▲	12200	11.00/20D	12.00/20	Her RXLD	6-4 3/4x5 1/4	558	...	430	150-2200	7-3 1/2x13 1/4	Y	Fu 5A650	10	Own W700	2F	H	••-6.8	Own W700	L4IHV	630	975	G	PX	82	10 1/4x3x5/16	TF
44	W-705	....	150	205	30000▲	12200	11.00/20D	12.00/20	Her RXLD	6-4 3/4x5 1/4	558	...	430	150-2200	7-3 1/2x13 1/4	Y	Fu 5A650	10	Own W700	2F	H	••-6.8	Own W700	L4IHV	630	975	G	PX	82	10 1/4x3x5/16	TF
45	W-712	....	150	205	34000▲	12600	11.00/20D	12.00/20	Her RXLDH	6-4 3/4x5 1/4	558	...	462	190-2600	7-3 1/2x13 1/4	Y	Fu 5A650	5	Own W712	2F		••-6.8	Own W712	L4IHV	630	975	G	PX	82	10 1/4x3x5/16	TF
46	(D) W-906	....	158	181	38000▲	15600	12.00/20D	14.00/20S	Cum HB600	6-4 7/8x6	672	...	500	150-1800	7-4 1/2x16	Y	Fu 4A86	12	Own W906	2F	H	••-6.2	Own W906	LT4IA	645	975	G	PX	90	10 1/4x3 [illegible]x5/16	TF
47	(D) W906R	....	158	181	39000▲	15700	12.00/20D	14.00/20S	Cum HRB-600	6-5 1/8x6	743	...	540	165-1800	7-4 1/2x16	Y	Eu 4A86	12	Own W906R	2F	H	••-6.2	Own W906R	LT4IA	645	975	G	PX	90	10 1/4x3 [illegible]x5/16	TF
48	W2200	....	160	181	40000▲	16500	13.00/20D	14.00/20S	Bu MO779	6-5 1/4x6	779	...	575	188-2100	7-3 3/4x17	Y	Fu 4A86	12	Own W2200	2F	H	••-6.15	Own 2200	LT4IA	645	975	G	PX	90	10 1/4x3 1/2x5/16	Tf
49	W2201	....	160	181	40000▲	16500	13.00/20D	14.00/20S	Bu MO893	6-5 5/8x6	893	...	670	200-1800	7-3 3/4x17	Y	Fu 4A86	12	Own W2201	2F	H	••-6.15	Own 2201	LT4IA	645	975	G	PX	90	10 1/4x3 1/2x5/16	TF
50	(D) W2204	....	160	181	46000▲	18500	13.00/20D	14.00/20S	Bu 6DC844	6-5 1/4x6 1/2	844	...	605	180-1800	7-3 3/4x17	Y	Fu 4A86	12	Own W2204	2F	H	••-6.4	Own 2204	LT4IA	780	1190	G	PX	90	10 1/4x3 1/2x5/16	TF
51	(D) W2205	....	160	181	54000▲	19500	13.00/24D	14.00/24	Bu 6DCS844	6-5 1/4x6 1/2	844	...	740	240-2100	7-3 3/4x17	Y	Fu5A920	10	Own W2205	2F	H	••-6.3	Own W2205	LT4IA	780	1190	G	PX	90	10 1/4x3 1/2x5/16	LF
52	W2206	....	160	181	54000▲	19000	13.00/24D	14.00/24	HS 400	6-5 3/4x7	●	...	930	295-2000	7-3 3/4x14 [illegible]	Y	Fu5A1120	10	Own W2206	2F	H	••-6.3	Own W2206	LT4IA	780	1190	G	PX	90	10 1/4x3 1/2x5/16	LF
53	(D) W2208	....	160	181	46000▲	17700	13.00/20D	14.00/20S	Cum NHB-600	6-5 1/8x6	743	...	535	200-2100	7-4 1/2x16 1/2	Y	Fu 4A86	12	Own W2208	2F	H	••-6.4	Own W2208	LT4IA	780	1190	G	PX	90	10 1/4x3 [illegible]x5/16	TF
54	W2209	....	160	181	54000▲	19500	13.00/24D	14.00/24	Cum NHRS600	6-5 1/8x6	743	...	800	300-2100	7-4 1/2x16 1/2	Y	Fu 5A1120	10	Own W2209	2F	H	••-6.30	Own W2209	LT4IA	780	1190	G	PX	90	10 1/4x3 [illegible]x5/16	LF
55	Sterling DD115	....	160	178	32000	11500	10.00/20	11.00/24	Wau 6SRKR	6-4 5/8x5 1/8	517	5.5	368	125-2250	7-3x13 3/4	Y	Fu 5A62♦	10	Tim 1357W	2F	H	6.52-8.6	Tim F3110W	Ws4IA	644	984	A	TX	76	9x3 1/4x1/4	A
56	(D) DD145H	....	167	185	36000	13900	11.00/20	12.00/24	Cum HB600	6-4 7/8x6	672	17	500	150-1800	7-4 1/2x16 1/2	Y	Fu 4B86▼	10	Tim 1758W	2F	H	7.33-10.3	Tim F409CW	Ws4IA	644	984	A	TX	77	9 1/4x3 1/4x5/16	A
57	Walter (c.f.) FZM	....	126	150	24000	9000	12.00/20S	....	Wau MZA	6-4 1/4x4 3/4	404	5.6	290	125-2600	7-2 3/4x12 1/2	Y	Own FJN	6	Own MS	2	H	••-8.00	Own FJ	O4IA	470	670	G	FI	84	12x3 1/2x1/2	B
58	(c.f.) AEB	....	126	150	32000	13000	12.00/24S	....	Wau 140GZ	6-4 5/8x5 1/2	554	6.2	440	150-2250	7-3 1/4x14	Y	Own FC	6	Own FCC	2	H	••-9.00	Own FC	O4IA	585	890	G	FI	96	14x3 3/4x1/2	B
59	(c.f.) AGB	....	138	162	32000	14000	12.00/24S	....	Wau 145GK	6-5 1/4x6	779	6.2	585	185-2000	7-3 1/2x17 3/4	Y	Own FA	6	Own FCC	2	H	••-9.00	Own FC	O4IA	585	890	G	FI	108	14x3 3/4x1/2	B
60	(c.f.) AGR	....	138	162	42000	15000	12.00/24D	....	Wau 145GK	6-5 1/4x6	779	6.2	585	185-2000	7-3 1/2x17 3/4	Y	Own FA	6	Own FCR	2	H	••-9.00	Own FC	O4IA	585	890	G	FI	108	14x3 3/4x1/2	B
61	Ward La Fr. FD1	....	....	....	35000▲	11500	11.00/22	11.00/22	Cont 6513	6-4 1/2x5 3/8	513	5.9	405	180-2800	7-3 1/4x14 1/2	..	Ful 5A620	5	Tim R462W	82	R	••-8.15	Tim F3100W	BW4IA	627	1029	Co	PM	.....	10x3x3/16	C
62	(D) FD2	....	....	....	35000▲	12000	11.00/24	11.00/24	Cum HB600	6-5 1/8x6	672	17	500	150-1800	7-4 1/2x16 1/2	..	Ful 5A920	5	Tim R462W	82	R	••-8.15	Tim F3100W	BW4IA	627	1029	Co	PM	.....	10x3x3/16	C

‡ Rear only: Front 6.00/16.
▲ Includes cab.

*—Complete vehicle with pick-up type body.
▼ Timken T77 2-speed Transfer Case.

♦—Timken T76-Two speed transfer case.
●—1091 cu. in.

For Directory of the Manufacturers listed above, see page 63.

CURRENT TRUCK SPECIFICATIONS — *Continued*

Line Number	Make and Model	Chassis List Price	Wheelbase: Minimum Standard	Wheelbase: Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	Tire Sizes (D-dual rear, S-single rear): Standard Front and Rear	Tire Sizes: Maximum Authorized Tire Size (Duals unless noted)	Engine Details: Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	Main Bearings: Number Diameter and Length	Governor Standard	Transmission: Make and Model	Forward Speeds	Rear Axle: Make and Model	Gear and Type	Drive & Torque	Gear Ratio Range in High	Front Axle: Make and Model	Brakes, Service: Make Location Type Operation	Lining Area	Drum Area	Drum Material	Hand Location Type	C-A Dimensions (Min. Std. W. B.)	Frame: Side Rail Dimensions	Frame: Type
1	Willys Jp....CJ-3A	1195*	80	80	3500	*2169	6.00/16	7.00/15	Own CJ-3A	4-3⅛x4⅜	134	6.5	105	60-4000	3-2.33x5.48	N	WG T90C	‡6	Spl 41-2	Hy½	H	** -5.38	Spl 25	B41H	118	198	a	F		4x1⅝x⅛	P
2	..........4WD	1695*	118	118	5300	*2920	7.00/16	....	Own 4WD	4-3⅛x4⅜	134	6.5	105	60-4000	3-2.33x5.48	Y	WGT90A	‡6	Tim51540NX4	S½	H	** -5.38	Spl 25	B41H	176	276	a	2I	42.28	5⅛x2x⅛	TD
	Six-Wheelers Wheels ▼ Driven																														
3	Dodge...B-1-VX	....	154	190	34000	......	9.00/20	10.00/20	Own T159	6-3¾x5	331	6.5	270	128-3000	7-3x11.2	Y	NP 88450	5	Tim SBD1555	HyF	..	6.3 -7.2	T-35020NX9	O6IA	727	1056	C	TX	84	10x3x¼	CP
4	Duplex....TH6	....	162	220	30000	9180	8.25/20	9.00/20	Her JXD	6-4x4¼	320	6.2	240	113-3000	7-2½x10⅞	Y	Fu 5B33▲	10	Tim SBD1055	BF	L	**-6.16	Tim 32502H	L6IHV	513	839	A	TX	83⅛	9½x3½x⅛	L
5	..........RH-6	....	160	208	40000	11500	10.00/20	11.00/20	Her WXLC3	6-4⅝x4¾	404	5.8	312	134-2600	7-2½x13½	Y	Fu 5A43	5	Tim SD3010	2F	R	8.27	Tim 35100	WS61A	1075	1525	A	TX	73⅛	10½x3½x⅛	L
6	(D)..........L6	....	172	208	45000	15000	11.00/20	12.00/20	Cum HB600	6-4⅛x6	672	17.	495	150-1800	7-4⅛x16½	Y	Fu 5A920	5	Tim SD454	SF2	L	6.8-8.15	Tim 26450	Ws6IA	1137	1625	A	TX	77⅝	10⅛x3½x⅛	L
7	Federal.....663MA	....	189	225	40000	14500	10.00/20	10.00/22	Con R6602	6-4⅛x5⅛	602	...	466	205-3000	7-3⅛x14½	Y	Fu 5A65▼	15	T SW3012P	WF	R	** -6.16	Tim 36000TW	Ws6IA	1082	1569	a	TD	108	10½x3⅛x⅛	T
8	........664MAB	....	189	225	55000	15850	11.00/22	12.00/20	Con R6602	6-4⅛x5⅛	602	...	466	205-3000	7-3⅛x14½	Y	Spl 7741▼	12	Tim SW456P	WF	R	** -7.6	Tim 27452W	Ws6IA	1308	1888	a	TD	108	10½x3⅛x⅛	T
9	..........664MA	....	189	225	55000	1a950	11.00/22	12.00/20	Con R6602	6-4⅛x5⅛	602	...	466	205-3000	7-3⅛x14½	Y	Spl 7741▼	12	Tim SD462P	BR	R	** -8.15	Tim 27452W	Ws6IA	1092	1624	a	TD	108	10½x3⅛x⅛	T
10	............629M	....	163	199	27500	8600	8.25/20	9.00/20	Her JXDF	6-4x4¼	320	...	250	131-3200	7-2½x10⅞	Y	Cla 205V‡‡▲	10	TSBD1055dph	SF	R	7.53 10.35	Tim 32514H	LT61HV	544	914	a	TX	84	9⅛x3⅛x⅛	TL
11	...........629ML	....	163	199	27500	8635	8.25/20	9.00/20	Her JXLDF	6-4x4½	339	...	272	131-3200	7-2½x10⅞	Y	Cla 205V‡‡▲	10	TSBD1055dph	SF	R	7.53 10.35	Tim 32514H	LT61HV	544	914	a	TX	84	9⅛x3⅛x⅛	T
12	............635M	....	167	203	36000	10400	9.00/20	9.00/20	Con T6371F	6-4⅛x4⅝	371	...	290	140-3000	7-2⅞x13½	Y	Cla 290VO▲	10	TSBD1555dph	SF	R	8.33 11.47	Tim 35011H	LT61HV	752	1132	a	TX	84½	10½x3⅛x⅛	T
13	............645M	....	167	215	38000	12325	10.00/22	10.00/22	Con T6427F	6-4⅛x4⅝	427	...	347	155-2600	7-2⅞x13½	Y	Cla 290VO	5°	T-SD3010P	BR	R	** -9.16	Tim 35011TW	Ws6IA	1073	1550	a	TD	84½	10½x3⅛x⅛	T
14	F.W.D.........H6x6	....	Opt	Opt	......	▲12150	9.00/20D	10.00/20	Wau MZA	6-4⅛x4¾	404	5.6	291	129-2800	7-2⅝x12½	Y	Own H	10	Own H	SF	L	** -7.45	Own H	L6IHV	647	1281	a	T6	Opt	9x3x¼	T
15	........M6x6G	....	Opt	Opt	......	▲21000	11.00/24D	12.00/24	Wau 145GK	6-5⅛x6	779	6.2	590	186-2000	7-3½x17⅝	Y	Own M	10	Wis SD462	2F	L	** -6.06	Wis F409	WW6IA	1080	1680	a	T6	Opt	10⅛x3x⅞	P
16	(D)....M6X6D	....	Opt	Opt	......	▲21600	11.00/24D	12.00/24	Bu DC844	6-5⅛x6½	844	...	605	180-1800	7-3⅝x17	Y	Own M	10	Wis SD462	2F	L	** -5.6	Wis F409	WW6IA	1080	1680	a	T6	Opt	10⅛x3x⅞	P
	Kenworth																														
17	.....(D)....522	....	191	255	42000	13900	10.00/20	11.00/22	Cum HB6	6-4⅛x6	672	17.	500	150-1800	7-4½x16⅛	Y	BL 8241	4	T U200Pa††	H2F	H	5.91-9.76	Tim FE900N	Ws4IA	880	1368	a	TD	100	9½x3⅛x⅛	C
18	.....(D)523 4R	....	191	255	42000	14600	10.00/20	11.00/22	Cum HB6	6-4⅛x6	672	17.	500	150-1800	7-4½x16⅛	Y	BL 8241	4	T SW3012PA	WF	L	4.72-6.16	Tim FE900N	Ws4rIA	868	1400	a	TD	100	9½x3⅛x⅛	C
19	.....(D)524 4R	....	195	255	42000	15500	10.00/20	11.00/22	Cum HB6	6-4⅛x6	672	17.	500	150-1800	7-4½x16⅛	Y	BL 8241	4	Tim SW456P	WF	L	5.67-8.20	Tim FE900N	Ws4rIA	1016	1556	a	TD	104	9½x3⅛x⅛	C
20	.....(D)548 4R	....	191	....	60000	20200	11.00/22	12.00/24	Cum HB6	6-4⅛x6	672	17.	500	150-1800	7-4½x16⅛	Y	BL 8241	4	Tim SFD460P	B2F	L	8.07-11.5	Tim FE900N	Ws4rIA	1016	1556	a	TD	100	9½x3⅛x⅛	abC
21	.....(D)552 4R	....	202	....	50000	21000	13.00/24	13.00/24	Cum HB6	6-4⅛x6	672	17.	500	150-1800	7-4½x16⅛	Y	BL 8241	4	Tim SFD460P	B2F	L	8.07-11.5	Tim FE900N	Ws4rIA	1016	1556	a	TD	111	9½x3⅛x⅛	dbC
22	(D)..........584	....	191	....	95000	24200	12.00/24	14.00/24	Cum HB6	6-4⅛x6	672	17.	500	150-1800	7-4½x16⅛	Y	BL 8241	4	Tim SD472P	B2F	L	8.07-11.5	Shu 12	Ws4rIA	1312	1956	a	TD	100	9½x3⅛x⅛	dbC
23	(D)..........825	....	195	255	42000	14400	10.00/20	11.00/22	Cum HB6	6-4⅛x6	672	17.	500	150-1800	7-4½x16⅛	Y	BL 8241	4	T GSW458P	WF	..	5.67-8.20	Tim FE900N	Ws4rIA	1016	1556	a	TD	104	9½x3⅛x⅛	C
24	829	....	178	255	42000	13600	10.00/20	11.00/22	Wau 140GZ	6-4⅝x5½	554	6.4	450	188-2600	7-3x13⅞	Y	Fu 5C650	5	T SD3010PA	B2F	L	8.27-10.2	Tim FE900N	Ws4rIA	868	1400	a	TD	87	9½x3⅛x⅛	C
25	(D)..........888	....	194	....	110000	29000	14.00/24	....	Cum NHB6	6-5⅛x6	743	15.	535	200-2100	7-4½x16⅛	Y	BL 8241	4	Tim CDB79	CD	..	** 14.71	Shu 12	Ws6IA	....	2447	a	TD	103	10⅛x3⅛x⅞	L
	Marmon-Herr.																														
26	(C)..........R5-6	....	156	....	22500	▲6850	7.50/20D	7.50/20	Ford	8-3⅛x3¾	239	6.4	180	100-3800	3-2½x4.71	N	Ford	4	Timken	S	H	** -6.67	Own M5	F-H	503	....	a	F	82⅛	7⅛x3x¼	C
27	(C)..........R6-6	....	180	....	22500	▲7100	7.50/20D	7.50/20	Ford	8-3⅛x3¾	239	6.4	180	100-3800	3-2½x4.71	N	Ford	4	Timken	S	H	** -6.67	Own M5	F-H	503	....	a	F	106⅛	7⅛x3x¼ •	C
28	........MH440-6	....	182	....	34000	▲10600	9.00/20	10.00/20	Her WXLC3	6-4⅝x4¾	404	5.4	239	118-2800	7-2½x13⅛	Y	Fu-MH31	5	Own 1123	2B	H	** -8.43	Own 121	Ws..A	876	....	C	F	96	9⅞x3x¼	T
29	........MH-555-6	....	182	....	42000	▲14900	11.00/20	11.00/20	Her RXC	6-4⅝x5¼	529	6.3	390	131-2200	7-3x13⅛	Y	Fu-MH33	5	Own 1124	2B	H	** -8.15	Own 122	Ws..A	1092	1608	...	F	93	10⅛x3x⅛	T
30	(C) R5-COE6	....	156	180	22500	7350	7.50/20D	7.50/20	Ford	8-3⅛x3¾	239	6.4	180	100-3800	3-2½x4.71	N	Ford	4	Ford	S	H	6.67	Own	F...H	303	563	A	F	106.1	7.08x2.8x¼	T
31	(C)..........Q-5-6	....	160	....	35000	▲9550	9.00/20	10.00/20	Ford	8-3½x4⅜	337	6.4	255	145-3600	3-2½x5.21	Y	Ford	5	Ford	....	H	** -6.80	Own	F...H	350	583	...	F	85	9x3x¼	T
32	(C)..........Q-6-6	....	184	....	35000	▲9700	9.00/20	10.00/20	Ford	8-3½x4⅜	337	6.4	255	145-3600	3-2½x5.21	Y	Ford	5	Ford	....	H	** -6.80	Own	F...H	350	583	...	F	109	9x3x¼	T
33	..............Q-5L-6	....	172	....	35000	▲9650	9.00/20	10.00/20	Ford	8-3½x4⅜	337	6.4	255	145-3600	3-2½x5.21	Y	Ford	5	Ford	....	H	** -6.80	Own	F...H	350	583	...	F	.....	9x3x¼	T
34	..............Q-6L-6	....	203	....	35000	▲9825	9.00/20	10.00/20	Ford	8-3½x4⅜	337	6.4	255	145-3600	3-2½x5.21	Y	Ford	5	Ford	....	H	** -6.80	Own	F...H	350	583	...	F	.....	9x3x¼	T
	Oshkosh																														
35	......W703-6X6	....	Opt	Opt	47000	16950	11.00/20D	12.00/20	Her RXLD	6-4⅝x5¼	558	5.4	430	150-2200	7-3⅛x13⅛	Y	Fu 5A650	12	Tim SD454W	2F	H	** -6.31	Own-Tim	LT6IHA	1080	1625	G	Opt	Opt	10⅛-3⅛-⅝	B
36	(D)....W1600BD	....	Opt	Opt	60000	22770	11.00/24D	12.00/24	Bu 6DC844	6-5⅛x6½	844	...	600	180-1800	7-3⅝x17	Y	Fu 4B186	12	Tim SD462	2F	H	** -6.14	Own-Tim	LT6IA	1080	1625	G	Opt	Opt	12⅝-3⅛-⅝	B
37	(D)..°°W1600BDH	....	Opt	Opt	60000	24300▫	11.00/24D	12.00/24	Bu 6DC844	6-5⅛x6½	844	...	600	180-1800	7-3⅝x17	Y	Fu 4B186	12	Tim SD462	2F	H	** -9.82	Own-Tim	LT6IA	1080	1625	G	Opt	Opt	12⅝-3⅛-⅝	B
38	(D). °°W1602BDH	....	Opt	Opt	95000	29300	14.00/24D	14.00/24	Bu 6DC844	6-5⅛x6½	844	...	600	180-1800	7-3⅝x17	Y	Fu 4B186	12	Tim SD472	2F	H	** -13.9	Own-Tim	LT6IA	....	2217	G	Opt	Opt	12⅝-3⅛-⅝	B
39	........W1600BG	....	Opt	Opt	60000	22770	11.00/24D	12.00/24	Bu MO893	6-5⅝x6	893	...	625	200-1800	7-3⅝x17	Y	Fu 4B186	12	Tim SD462	2F	H	** -9.82	Own-Tim	LT6IA	1080	1625	G	Opt	Opt	12⅝-3⅛-⅝	B
40	(D)...W1600CD	....	Opt	Opt	60000	23400▫	11.00/24D	12.00/24	Cum HB600	6-4⅛x6	672	...	500	150-1800	7-4½x16	Y	Fu 4B186	12	Tim SD462	2F	H	** -6.14	Own-Tim	LT6IA	1080	1625	G	Opt	Opt	12⅝-3⅛-⅝	B
41	(D)..W1600CDS	....	Opt	Opt	60000	23700▫	11.00/24D	12.00/24	Cum HBS600	6-4⅛x6	672	...	635	200-1800	7-4½x16	Y	Fu 4B186	12	Tim SD462	2F	H	** -9.82	Own-Tim	LT6IA	1080	1625	G	Opt	Opt	12⅝-3⅛-⅝	B
42	(D). °°W1600CDH	....	Opt	Opt	60000	24000▫	11.00/24D	12.00/24	Cum HB600	6-4⅛x6	672	...	500	150-1800	7-4½x16	Y	Fu 4B186	12	Tim SD462	2F	H	** -9.82	Own-Tim	LT6IA	1080	1625	G	Opt	Opt	12⅝-3⅛-⅝	B
43	(D) °°W1600CDSH	....	Opt	Opt	60000	24300▫	11.00/24D	12.00/24	Cum HBS600	6-4⅛x6	672	...	635	200-1800	7-4½x16	Y	Fu 4B186	12	Tim SD462	2F	H	** -6.14	Own-Tim	LT6IA	1080	1625	G	Opt	Opt	12⅝-3⅛-⅝	B
	Peterbilt																														
44	(D)..........350	....	193	Opt	42000	......	10.00/20D	11.00/22	Cum HB600	6-4⅛x6	672	17.	500	150-1800	7-4½x16½	Y	Spl 8041	12	Tim SW3012W	WF	R	6.00- 8.5	Tim FE900PA	Ws6IA	1125	1569	...	TD	99½	10⅝x3½x⅛	CT
45	(D)..........360	....	198	Opt	54000	......	10.00/20D	11.00/22	Cum HB600	6-4⅛x6	672	17.	500	150-1800	7-4½x16½	Y	Spl 8041	12	Tim SW456W	WF	R	6.00-10.2	Tim FE900PA	Ws6IA	1005	1517	...	TD	104½	10⅝x3½x⅛	CT
46	(D)..........370	....	198	Opt	58000	......	10.00/20D	11.00/22	Cum HB600	6-4⅛x6	672	17.	500	150-1800	7-4½x16½	Y	Spl 8041	12	Tim SW456W	WF	R	6.00-10.2	T 27463	Ws6IA	1084	1626	...	TD	104½	10⅝x3½x⅛	CT
47	(D)..........380	....	194	Opt	58000	......	10.00/20D	11.00/22	Cum HB600	6-4⅛x6	672	17.	500	150-1800	7-4½x16½	Y	Spl 8041	12	Tim SD462W	2F	R	** -8.07	T 27463	Ws6IA	1084	1626	...	TD	98½	10⅝x3½x⅛	CT
48	(D)..........390	....	197	Opt	79000	......	12.00/24	14.00/24	Cum HB600	6-4⅛x6	672	17.	500	150-1800	7-4½x16½	Y	Spl 8041	12	Tim SD472W	2F	R	** -8.07	T 27463	Ws6IA	1622	2215	...	TD	103½	10½x3⅛x⅛	CT
49	Reo..........E-216	....	150	203	28000	9615▲	8.25/20	9.00/20	Own 292	6-3⅞x4⅛	292	6.5	224	124-3300	7-2⅛x9.408	Y	Cla 205V	5	Tim SBD1055	SF	T	5.28-7.4	Tim 32500	LT6IVH	500	842	var	TX	85⅝	9½x3⅛x⅛	TfP
50	..............E-226	....	150	203	34000	10250▲	9.00/20	10.00/20	Own 331	6-4⅛x4⅛	331	6.4	264	140-3200	7-2⅛x9.408	Y	Cla 205V	5	Tim SBD1555	SF	T	5.57-7.8	Tim 32500	LT6IVH	560	944	var	TX	85⅝	9½x3⅛x⅛	TfP
51	..............E-236	....	169	200	42000	12980▲	10.00/20	11.00/20	Con T6427	6-4⅛x4⅝	427	5.9	338	145-2600	7-2⅞x13.6	Y	Cla 270V	5	Tim SD3010	SFd	T	7.5 -8.27	Tim 36000	TWs6IA	1082	1570	var	TD	104½	9½x3⅛x⅛	TfB
52	306	....	186	248	45000	15520▲	10.00/20	11.00/20	Con R6513	6-4½x5⅜	513	5.7	392	167-2600	7-3⅛x14.7	Y	Spl 6252A	5	Tim SD3010	SFd	T	7.5 -8.27	Tim 36000	TWs6IA	1082	1570	var	TD	108½	10⅛x3⅛x⅛	Tf
53	316	....	186	248	55000	16480▲	10.00/20	11.00/22	Con R6602	6-4⅝x5⅜	602	5.7	456	194-2600	7-3⅛x14.7	Y	Spl 6253	5	Tim SD454	SFd	T	7.33-10.27	Tim 36000	TWs6IA	1230	1778	var	TD	108½	10⅛x3⅛x⅝	TfB
	Sterling																														
54	........HBS130	....	164	183	32000	11000	8.25/20	10.00/20	Wau 6MZA	6-4⅛x4¾	404	5.6	290	130-3000	7-2⅝x12½	Y	Fu 5A43	5	T-SBD1555DPH	SF	L	6.80-13.14	T-35011H	T6IHV	664	1134	A	TX	53	9x3⅛x¼	A
55	........HDS140	....	164	183	36000	11800	9.00/20	10.00/20	Wau 6MZA	6-4⅛x4¾	404	5.6	290	130-3000	7-2⅝x12½	Y	Fu 5A43	5	T-SD3010PA	2F	L	6.84-10.22	T-35011TW	Ws6IA	1074	1554	A	TX	53	9x3⅛x¼	A
56	........HWS160	....	164	183	42000	12800	10.00/20	11.00/22●	Wau 6SRKR	6-4⅝x5⅛	517	5.5	368	125-2250	7-3x13⅛	Y	Fu 5A62	5	T-SW3010PA	WF	L	5.40-8.50	T-36000TW	Ws6IA	1082	1574	A	TX	53	9x3⅛x¼	A

▲ Includes Cab.
‡‡ Overdrive optional.
* Complete vehicle with pick-up type body.
†† Timken T13126 PA Trailing Axle.
▼ Auxiliary transmission Spicer 703F with 3 forward speeds.
° Auxiliary transmission Spicer 6231B at extra cost gives 15 forward speeds
‡ Three speed transmission—2 speed transfer case.
△ Torque divider, Timken T70-2 speed.
°° Hydraulic Coupling.
▫ Chassis weights on duals Front, Center and Rear.
● When 11.00/22 tires are required it is necessary to furnish 52 inch axle spacing.

For Directory of the Manufacturers listed above, see page 63.

CURRENT TRUCK SPECIFICATIONS—*Concluded*

Line Number	Make and Model	Chassis List Price	Wheelbase: Minimum Standard	Wheelbase: Maximum Standard	Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	Tire Sizes (D-dual rear, S-single rear): Standard Front and Rear	Tire Sizes: Maximum Authorized Tire Size (Duals unless noted)
	Sterling Con't.							
1	.....HW8235	......	182	193	52000	15700	11.00/20	11.00/24
2	(D)...HW8160H	......	182	193	42000	14250	10.00/20	11.00/22
3	(D)...HW8235H	......	182	193	52000	16000	11.00/20	11.00/24
4	.........HC8195	......	170	189	48000	15300	10.00/20	11.00/22
5	.........HC8265	......	182	193	60000	17750	11.00/20	12.00/24
6	.........HC8297	......	182	193	70000	20750	12.00/24‡	13.00/24△
7	.........HC8330	......	174	187	80000	23150	12.00/24	14.00/24△
8	(D)...HC8195H	......	182	193	48000	16000	10.00/20	11.00/22
9	(D)...HC8265H	......	182	193	60000	18100	11.00/20	12.00/24
10	(D)...HC8297H	......	182	193	70000	21050	12.00/24‡	13.00/24△
11	(D)...HC8330H	......	174	187	80000	23450	12.00/24	14.00/24△
	Truckstell							
12	(C) F2X28 2F	......	156	237	28000	6468▲	7.50/20♠	8.25/20-10
13	(C)F2X29-0(coe)2F	......	134	224	28500	7083▲	7.50/20♠	8.25/20-10
14	(C) F2X28-7 2F	......	156	250	28000	7897▲	7.50/20♠	8.25/20-10
15	(C) F2X34-7 2F	......	156	250	34000	8100▲	8.25/20†	9.00/20-10
16	(C) F2X34-8 2F	......	156	250	34000	8704▲	9.00/20	9.00/20-10
17	(C) F2X40 2F	......	156	250	40000	9309▲	9.00/20‡‡	10.0/20-10
18	(C) C2X28 2F	......	157	247	28000	6629▲	7.50/20D	9.00/20-10
19	(C)C2X29-0(coe)2F	......	130	224	29000	7204▲	7.50/20D	9.00/20-10
20	(C) F4X26 4R	......	144	209	26000	7300▲	7.50/20	8.25/20•
21	(C) F4X27 (coe)4R	......	126	185	27000	7665▲	7.50/20	8.25/20•
22	.........F4X29	......	144	209	29000	7850▲	7.50/20	8.25/20-10
23	.........F4X30	......	126	185	30000	8200▲	7.50/20	8.25/20-10
24	(C) F4X34 4R	......	156	228	34000	10000▲	8.25/20	9.00/20•
25	(C) F4X38 4R	......	156	228	38000	10650▲	9.00/20	10.00/20•
26	(C) C4X28 4R	......	151	217	28000	7500▲	7.50/20	8.25/20•
27	(C) C4X29 (coe)4R	......	125	192	29000	7865▲	7.50/20	8.25/20•
28	.........C4X29	......	151	217	29000	8040▲	7.50/20	8.25/20-10
29	.........C4X30	......	125	192	30000	8400▲	7.50/20	8.25/20-10

Line Number	Engine Details: Make and Model	No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M. Given	Main Bearings: Number Diameter and Length	Governor Standard	Transmission: Make and Model	Forward Speeds
1	Wau 145GK	6-5¼x6	779	6.2	585	186-2100	7-3½x17¾	Y	Fu 4B86	4
2	Cum HB600	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	Fu 4B86	4
3	Cum HB600	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	Fu 4B86	4
4	Wau 140GK	6-4½x5½	525	6.0	426	142-2200	7-3⅜x13½	Y	Fu5A62-3A92	15
5	Wau 145GK	6-5¼x6	779	6.2	585	186-2100	7-3½x17¾	Y	Fu 4B86♦	12
6	Wau 145GK	6-5¼x6	779	6.2	585	186-2100	7-3½x17¾	Y	Fu 4B86♦	12
7	Wau 145GK	6-5¼x6	779	6.2	585	186-2100	7-3½x17¾	Y	Fu 4B86♦	12
8	Cum HB600	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	Fu4B86-3A92	12
9	Cum HBD600	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	Fu 4B86♦	12
10	Cum HBD600	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	Fu 4B86♦	12
11	Cum HBD600	6-4⅞x6	672	17.	500	150-1800	7-4½x16½	Y	Fu 4B86♦	12
12	Ford	8-3³⁄₁₆x3¾	239	6.8	180	100-3800	3-2.49x4.9	N	Ford	4
13	Ford	8-3³⁄₁₆x3¾	239	6.8	180	100-3800	3-2.49x4.9	N	Ford	4
14	Ford	8-3½x4⅜	337	6.4	255	145-3600	3-2.87x5.0	Y	Ford	5
15	Ford	8-3½x4⅜	337	6.4	255	145-3600	3-2.87x5.0	Y	Ford	5
16	Ford	8-3½x4⅜	337	6.4	255	145-3600	3-2.87x5.0	Y	Ford	5
17	Ford	8-3½x4⅜	337	6.4	255	145-3600	3-x.87x5.0	Y	Ford	5
18	Chev.	6-3⁹⁄₁₆x3¹⁵⁄₁₆	235	6.6	192	93-3100	4 Std.Chev	Y	Chev.	4
19	Chev.	6-3⁹⁄₁₆x3¹⁵⁄₁₆	235	6.6	192	93-3100	4 Std.Chev	Y	Chev.	4
20	Ford	8-3³⁄₁₆x3¾	239	6.8	180	100-3800	3-2.49x4.9	N	Ford ⊞	8
21	Ford	8-3³⁄₁₆x3¾	239	6.8	180	100-3800	3-2.49x4.9	N	Ford ⊞	8
22	Ford	8-3³⁄₁₆x3¾	239	6.8	180	100-3800	3-2.49x4.9	N	Ford♦♦	12
23	Ford	8-3³⁄₁₆x3¾	239	6.8	180	100-3800	3-2.49x4.9	N	Ford♦♦	12
24	Ford	8-3½x4⅜	337	6.4	255	145-3600	3-2.87x5.0	Y	Ford ♦♦	15
25	Ford	8-3½x4⅜	337	6.4	255	145-3600	3-2.87x5.0	Y	Ford ♦♦	15
26	Chev.	6-3⁹⁄₁₆x3¹⁵⁄₁₆	235	6.6	192	93-3100	4-St. Chev.	Y	Chev. ⊞	8
27	Chev.	6-3⁹⁄₁₆x3¹⁵⁄₁₆	235	6.6	192	93-3100	4-St. Chev.	Y	Chev. ⊞	8
28	Chev.	6-3⁹⁄₁₆x3¹⁵⁄₁₆	235	6.6	192	93-3100	4-St. Chev.	Y	Chev.♦♦	12
29	Chev.	6-3⁹⁄₁₆x3¹⁵⁄₁₆	235	6.6	192	93-3100	4-St. Chev.	Y	Chev.♦♦	12

Line Number	Rear Axle: Make and Model	Gear and Type	Drive & Torque	Gear Ratio Range in High	Front Axle: Make and Model	Brakes, Service: Make Location Type Operation	Lining Area	Drum Area	Drum Material	Hand Location Type	C-A Dimensions (Min. Std. W. B.)	Frame: Side Rail Dimensions	Frame: Type
1	T-SW456P	WF	L	5.67-8.20	T-27454W	Ws61A	1308	1892	A	TX	92	9½x3½x⅜	A
2	T-SW3012PA	WF	L	4.71-6.17	T-36000TW	Ws61A	1082	1574	A	TX	92	9x3½x¼	A
3	T-SW456P	WF	L	5.66-8.20	T-27454W	Ws61A	1308	1892	A	TX	92	9½x3½x⅜	A
4	Own 195W	CD	R	6.04-7.31	T-36000TW	Ws61A	1082	1802	A	TX	83	9½x3½x⅜	A
5	Own 265W	CD	R	9.21-13.16	T-27454W	Ws61A	1040	1912	A	JX	92	9½x3½x⅜	A
6	Own 330W	CD	R	9.21-13.16	T-27454W	Ws61A	1280	1988	A	JX	92	9½x3½x⅜	AL
7	Own 330W	CD	R	9.21-13.16	T-27454W	Ws61A	1280	1988	A	JX	91	12x3½x⅜	AL
8	Own 195W	CD	R	6.04-7.31	T-36000TW	Ws61A	1082	1802	A	TX	92	9½x3½x⅜	A
9	Own 265W	CD	R	9.21-13.16	T-27454W	Ws61A	1160	1912	A	JX	92	9½x3½x⅜	A
10	Own 330W	CD	R	9.21-13.16	T-27454W	Ws61A	1280	1988	A	JX	92	9½x3½x⅜	AL
11	Own 330W	CD	R	9.21-13.16	T-27454W	Ws61A	1280	1988	A	JX	91	12x3½x⅜	AL
12	Ford■	SF	H	5.83-8.11	Ford	F61HV	502	835	*	TX	82½	8x2.8x.46	TL♥
13	Ford■	SF	H	5.83-8.11	Ford	F61HV	502	835	*	TX	82½	8x2.8x.46	TL♥
14	Ford	HyF	H	6.8	Ford	F61HV	560	935	*	TX	82½	9⅜x3x¼	TL♥
15	Ford	HyF	H	6.8	Ford	F61HV	560	935	*	TX	82½	9⅜x3x¼	TL♥
16	Ford■	SF	H	6.5-8.87	Ford	F61HV	695	1081	§	TX	82½	9⅜x3x¼	TL♥
17	Ford■	SF	H	6.5-8.87	Ford	F61HV	835	1232	§	TX	82½	9⅜x3x¼	TL♥
18	Chev.▼	HyF	H	6.17	Chev.	C61HV	530	808	§	2I	82¼	9⅜x3x¼	C♥
19	Chev.▼	HyF	H	6.17	Chev.	C61HV	530	808	*	2I	82¼	9⅜x3x¼	C♥
20	Ford	SF	R	•• -6.67	Ford	F61HV	498	836	Co	TX	64	8x3x.46	TL♥
21	Ford	SF	R	•• -6.67	Ford	F61HV	498	836	Co	TX	71	8x3x.46	TL♥
22	Ford	HyF	R	•• -7.2	Ford	F61HV	498	836	Co	TX	64	8x3x.46	TL
23	Ford	HyF	R	•• -7.2	Ford	F61HV	498	836	Co	TX	71	8x3x.46	TL
24	Ford	HyF	R	•• -6.8	Ford	F61HV	745	1169	Co	TX	82	9⅜x3x¼	TL♥
25	Ford	HyF	R	•• -7.16	Ford	F61HV	825	1231	C	TX	82	9⅜x3x¼	TL♥
26	Chev.	HyF	R	•• -6.17	Chev.	C61HV	506	780	Co	2I	68	9⅜x3x¼	C♥
27	Chev.	HyF	R	•• -6.17	Chev.	C61HV	506	780	Co	2I	69	9⅜x3x¼	C♥
28	Chev.	HyF	R	•• -6.17	Chev.	C61HV	506	780	Co	2I	68	9⅜x3x¼	C
29	Chev.	HyF	R	•• -6.17	Chev.	C61HV	506	780	Co	2I	69	9⅜x3x¼	C

▲ Includes Cab.
♠ Front only; Rear 8.25/20.
‡ Rear only; Front 11.00/24.
♦ Auxiliary transmission, Spicer 8031.
■ Two speed axle with vacuum shift.
△ Rear only; Front 12.00/24.
† Front only; Rear 9.00/20.
‡‡ Front only; Rear 10.00/20.
⊞ With Baumis auxiliary transmission.
▼ Two speed axle available—6.13-8.10.
♥ Including slip-over reinforcing frame channels.
♦♦ With Baumis power divider.
* Composite Cast Alloy Iron.
§ Cast Alloy Iron.
• Single front dual rear.

For Directory of the Manufacturers listed above, see page 63.

Performance Factor

Derivation of the Performance Factor shown in the 1950 passenger car specifications on page 113 of this issue.

For some time we have been printing performance factors of passenger cars in our specifications. These factors are obtained by means of the equation,

$$P.F. = \frac{3825\ Dr}{Wd} \text{ cu. in. per ton foot.}$$

and a number of inquiries have been received as to how this equation is derived.

The performance factor represents the number of cubic inches the pistons of the engine displace. If the piston displacement of the engine is represented by D, it is evident that the displacement under gas pressure is D/2 per crankshaft revolution, as each piston is under gas pressure only once in two revolutions. This displacement (that is, D/2) must evidently be divided by the weight of the loaded vehicle in tons and by the distance in feet the car travels during one revolution of the crankshaft. As to the weight, it is our custom to add 500 lb. to the shipping weight, for occupants and supplies. The weight W being given in pounds, the weight in tons is evidently W/2000.

While the crankshaft makes one revolution, the driving wheels make 1/r revolution, r being the rear-axle ratio. This assumes that the car is being driven in direct-drive, to which condition the performance factor as given applies. If the effective diameter of the driving wheels is d in., then the car travel per wheel revolution is 3.14 d/12 ft. and the car travel per crankshaft revolution (3.14 d)/(12 r). Therefore, the cu. in. displaced by the pistons under gas pressure, per ton moved, per foot traveled is

$$\frac{\frac{D}{2}}{\frac{W}{2000} \times \frac{3.14\ d}{12\ r}} = \frac{3825\ Dr}{Wd}$$

U. S. ROTARY WING AIRCRAFT

MAKE AND MODEL		GENERAL: A. T. C. Number	Number of Seats	Fuel Capacity (Gal.)	Octane Number Recommended	Oil Capacity (Gal.)	ENGINE: Make and Model		Number Used	Rated Hp. at Specified R. P. M.
Bell	47B	1	2	32	(a)	2	Frank	6V4-178-B32	1	178-3000
	47D	1	2	33	(a)	2	Frank	6V4-178-B32	1	178-3000
	47D-1	....	3	79	...	2	Frank	6V4-178-B32	1	178-3000
Doman	LZ-1A	....	2	75	91	4.1	Frank	0-405-9	1	220-3100
	LZ-2C	....	2-7	55	80	3¼	Frank	6AL-500	1	250-3000
Kaman	K-225	1-H-1	3	38	91	4½	Lyc	0-435-AZ	1	225-3000
Kellett	H-10	....	12	180	(f)	21.3	Cont	R-975-15	2	500-2450
McDonnell	AF-38	....	1	26	73	N	Own	Ram-Jets	2	....
	N-XHJD-1	....	10	200	91	16	P&W	R985-AN-14B	2	450-....
Piasecki	HRP-2	....	10	100	91	8.5	P&W	R-1340	1	600-2250
	HUP-1	....	7	100	100	8.5	Cont	975-34	1	525-2500
Sikorsky	S-51	H-2	4	100	80	8	P&W	R-985-B4	1	450-2300
	S-52-2	H-3	3	62	80	3.2	Frank	6V6-245-B16F	1	245-3275
	S-55	....	12	190	80	9½	P&W	R-1340	1	600-2250
United	UH-12	6H-1	3	27	80	2	Frank	6V4-178-B33	1	178-3000

MAKE AND MODEL		MAIN ROTOR: Number Used	Location	Blades per Rotor	Diameter of Rotor (Ft. In.)	Blade Area (Sq. Ft.)	Type (If more than one used)	Rotor R. P. M. at Cruising Speed	Disc Area (Sq. Ft.)	ANTI-TORQUE ROTOR: Number of Blades	Rotor Diameter (Ft. In.)	Blade Area (Sq. Ft.)	Rotor R. P. M. at Cruising Speed	Disc Area (Sq. Ft.)
Bell	47B	1	Cla	2	35' 1½"	35.3	....	330	965	2	5' 9"	2.40	1800	25.3
	47D	1	Cla	2	35' 1½"	35.3	....	330	965	2	5' 9"	2.40	1800	25.3
	47D-1	1	(b)	2	35' 1½"	35.3	....	330	965	2	5' 9"	2.40	1800	25.3
Doman	LZ-1A	1	Cen	4	38' 4"	72	....	239	1153	3	8' 0"	6.10	1200	50.2
	LZ-2C	1	Cen	4	45' 0"	82	....	200	1590	3	8' 0"	6.10	1200	50.2
Kaman	K-225	2	**	2	38' 0"	....	Int	236	1268	N	....	....	....	....
Kellett	H-10	2	SS	3	65' 0"	296	Int	140	3710	N	....	....	....	....
McDonnell	AF-38	1	....	2	18' 0"	7.6	....	840	254	N	....	....	....	....
	N-XHJD-1	2	SS	3	50' 0"	200	Int	190	3750	N	....	....	....	....
Piasecki	HRP-2	2	Tan	3	41' 0"	....	Tan	....	1321	N	....	....	....	....
	HUP-1	2	Tan	3	35' 0"	....	Tan	....	958	N	....	....	....	....
Sikorsky	S-51	1	For	3	49' 0"	....	....	194	1886	2	8' 8"	....	1278	59.0
	S-52-2	1	Aft	3	33' 0"	....	....	300	855	2	5' 4"	....	2205	22.4
	S-55	1	For	3	53' 0"	....	....	194	2206	2	8' 8"	....	1360	59.0
United	UH-12	1	For	2	35' 0"	36	....	308	962	2	5' 6"	2.30	1770	23.8

MAKE AND MODEL		WEIGHTS (Lb.): Gross (Normal Load)	Empty	Useful Load	PERFORMANCE: Max. Speed at Altitude	Cruising Speed at Altitude	Fuel Consumption Cruising Speed (Lb./hr.)	Range (Miles) at Cruising Speed	Rate of Climb: Maximum (Ft./min.)	Rate of Climb: Vertical (Ft./min.)	Service Ceiling—Normal Load	LANDING GEAR: Type	Tread—Main Gear
Bell	47B	2200	1523	677	40-11600	70+-5000	66	212	925	....	11600	(4t)	5' 10¼"
	47D	2200	1482	718	40-11000	70+-5000	66	212	800	....	11000	(4t)	5' 10¼"
	47D-1	2200	1380	820	40-11000	70+-5000	66	192	800	....	11000	(4t)	5' 10¼"
Doman	LZ-1A	2490	1920	570	135-SL	100-SL	85	520	1900	520	1400	TS	9' 0"
	LZ-2C	3200	1800	1400	85-SL	75-....	74	225	1135	340	14000	Tri	7' 0"
Kaman	K-225	2500	1800	700	73-SL	65-SL	67	180	1000	390	12000	Tri	7' 6"
Kellett	H-10	11100	8267	2813	121-SL	90-SL	280	348	1650	1000	18800	Tri	10' 0"
McDonnell	AF-38	610	285	325	50+-SL	50-SL	..	...	....	....	.....	Tri	5' 0"
	N-XHJD-1	11000	....	....	100+-SL	70+-SL	..	...	....	....	.....	Tri	17' 6"
Piasecki	HRP-2	6878	5054	1824	105+-SL	85+-SL	..	300+	800+	350+	11000	Tri	......
	HUP-1	5355	3683	1672	125-SL	100+-SL	..	400+	1200	950	12000	Tri	......
Sikorsky	S-51	5500	3805	1695	103-(c)	85-(d)	168	258	1000	200	13500	Tri	12' 0"
	S-52-2	2400	1650	750	110-SL	98-(e)	84	415	1300	800	15500	Quad	6' 0"
	S-55	6800	4200	2600	103-(e)	86-(d)	210	470	1000	200	13500	Quad	11' 0"
United	UH-12	2247	1442	805	84-SL	75-SL	75	144	730	400	7500	Tri	7' 6"

ABBREVIATIONS

**—Laterally disposed on center of gravity
(a)—80-90 octane
(b)—2" Aft station O
(4t)—Quadracycle with tail skid
(c)—Sea level to 2300 ft.
(d)—Sea level to 9500 ft.
(e)—Sea level to 5000 ft.
(f)—91/96 octane.
Cen—Central
Cla—Center line of engine aft of cabin
Cont—Continental Motors Corp.
For—Forward
Frank—Franklin (Air-Cooled Motors)
Int—Inter-meshing
Lyc—Lycoming Motor
N—No or None.
P&W—Pratt & Whitney Aircraft
Quad—Quadracycle.
SL—Sea level
SS—Side by side
Tan—Tandem, fore and aft
Tri—Tricycle
TS—Tail skid

For Directory of the Manufacturers listed above, see page 63.

1949 Personal Aircraft Shipments by Manufacturers*

Manufacturer	Number of Aircraft	Manufacturer's Net Billing Price
Aeronca	311	$823,000
Beech	298	2,770,000
Bellanca	27	145,000
Cessna	857	4,545,000
Engineering and Research	53	170,000
Mooney	73 (b)	131,000
Piper	1,278	$3,244,000
Ryan	215	1,816,000
Taylorcraft	37	80,000
Texas Engineering	52	181,000
Total	3,201	$13,905,000

* Personal Aircraft Council, Aircraft Industries Association.

AMERICAN COMMERCIAL

Line Number	Make and Model	Type	A.T.C. Number	Number of Crew	Number of Passengers Seated	Fuel: Capacity (Gal.)	Fuel: Octane Recommended	Oil Capacity (Gal.)	Engine: Make and Model	Engine: Number Used	Engine: Take-off Hp. at Specified R.P.M.	Propellers: Make	Propellers: Type	Propellers: Diameter (Ft. & In.)	Propellers: Number of Blades	Dimensions: Span	Dimensions: Overall Length	Dimensions: Height (Taxi Position)	Dimensions: Wing Area (Gross) Sq. Ft.	Dimensions: Aileron Area (Sq. Ft.)
1	Aeronca 7AC	PL-S	A759	1	1	13	80	1	Cont A-65-8	1	65-2300	L-H-S	Fxd	◆◆	2	35' 2"	21' 6"	7' 0"	170.0	7.10
2	7BCM	PL	A759	1	1	13	80	1⅛	Cont C-85-FJ	1	85-2575	S-M	Fxd	(aa)	2	35' 2"	21' 6"	7' 0"	170.0	7.10
3	11CC	PL-S	A796	1	1	23	80	1⅛	Cont C-85-8F	1	85-2575	S-L-M	Fxd	(bb)	2	36' 1"	20' 5"	6' 7"	175.0	7.10
4	7DC	PL	792	1	1	18.6	80	1⅛	Cont C-85-8F	1	85-2575	S-M	Fxd	(bb)	2	35' 2"	21' 6"	7' 0"	170.0	7.10
5	7EC	PL	...	1	1	24.5	80	1¼	Cont C-90-12F	1	90-2475	S-F-M	Fxd	(cc)	2	35' 2"	21' 6"	7' 0"	170.0	7.10
6	7CCM	PL-S	759	1	1	18.5	80	1¼	Cont C-90-8F	1	90-2475	S-M	Fxd	(cc)	2	35' 2"	21' 6"	7' 0"	170.0	7.10
7	15	PL	802	1	3	36	80	2	Cont C-145-2	1	145-2700	S-M-A	Fxd	6' 4"	2	37' 6"	25' 2"	7' 0"	200.0	7.10
8	Baumann B-290	PC-L	...	1	4	75	73	...	Cont C-145	2	*145-2700	A-S	Cnt	6' 6"	2	41' 0"	27' 6"	10' 0"	207.0	*8.95
9	Beechcraft A35	PL	A777	1	3	39	80	2½	Cont E185-8	1	185-2300	Own	Cnt	7' 4"	2	32' 10"	25' 2"	6' 6½"	177.6	14.33
10	45	PL	...	1	1	50	80	2½	Cont E185-8	1	205-2600	Own	Fxd	7' 4"	2	32' 10"	25' 10 1/16"	9' 7"	177.6	14.33
11	D18S	PL	765	1	8	206	87	17	P&W R985-AN14B	2	450-....	Ham	Hyd-Mc	8' 3"	2	47' 7"	33' 11½"	9' 2½"	349.0	22.6
12	Boeing Stratocruiser	PL	812	5-7	80	7790	115/145	200	P&W TSB3-G	4	3500-2700	H-C	C-Ff-Fr	16' 8"	4	141' 3"	110' 4"	38' 3"	1769.0	64.6*
13	Stratofreighter	CL	...	3-5	N	7790	115/145	200	P&W TSB3-G	4	3500-2700	H-C	C-Ff-Fr	16' 8"	4	141' 3"	110' 4"	38' 3"	1769.0	64.6*
14	Callair A3	PL	758	...	2	27	73	2	Cont C125	1	125-2550	Sen	Fxd	6' 4"	2	35' 10"	23' 5"	7' 0"	181.6	10.9*
15	Cadet-S-1A	PL	737	...	2	15	73	1¼	Cont A65, 85, 90	1	65-2300	Sen	Fxd	6' 0"	2	35' 6"	23' 3 1/16"	7' 3"	173.8	19.35
16	Cessna 140	PL-S	768	...	2	25	73	1¼	Cont C85 or C90	1	90-2475	Sen	Fxd	6' 2"	2	33' 4"	21' 6"	6' 3¼"	159.6	17.88
17	190	PL-S	790	1	4-5	80	80	5	Cont W670-23	1	240-2200	Ham	Cst	7' 9"	2	36' 2"	27' 4"	7' 2"	218.0	12.3
18	195	PL-S	790	1	4-5	80	80	5	Jac R755-A2	1	300-2200	Ham	Cst	7' 9"	2	36' 2"	27' 4"	7' 2"	218.0	12.3
19	170	PL-S	799	1	4	42	80	2	Cont C145	1	145-2700	Sen	Fxd	6' 1"	2	36' 0"	25' 0"	6' 7½"	175.0	17.88
20	Convair Press. Liner	PC-L	793	4	40	1000	100/130	140	P&W R2800	2	2400-2800	H-C	C-Ff-Fr	13' 1"	3	91' 9"	74' 8"	26' 11"	817.0	42.0
21	Douglas DC-6A-1135	CL	...	3	N	3322	108/135	150	P&W R-2800CB-17	4	2500-2800	Ham	R-Ft	13' 1"	4	117' 6"	105' 7"	28' 6"	1463	85.1
22	DC-6-1156	PC-L	...	5	56	3322	100/130	150	P&W R-2800CA-15	4	2100-2800	Curt	C-Ff-Fr	13' 1"	3	117' 6"	100' 7"	28' 5"	1463	85.1
23	DC-6-1159	PC-L	...	7	48	4248	100/130	150	P&W R-2800CA-15	4	2400-2800	Ham	R-Ft	13' 1"	3	117' 6"	100' 7"	28' 5"	1463	85.1
24	DC-6B-1198	PC-L	...	5	66	3322	108/135	150	P&W R2800-CB17	4	2500-2800	Ham	R-Ft	13' 1"	4	117' 6"	105' 7"	28' 6"	1463	85.1
25	DC3-1189A	PC-L	...	3	31	822	100/130	56	Wrt R1820-C9HE	2	1475-2800	Ham	FF	11' 6"	3	90' 0"	67' 8½"	18' 3"	988	71.9
26	DC3-1189A	PC-L	...	3	31	822	100/130	56	P&W R2000-D7	2	1450-2800	Ham	FF	11' 6"	3	90' 0"	67' 8½"	18' 3"	988	71.9
27	Funk B85C	PL	...	...	2	20	73/80	4½	Cont C85-12	1	85-....	Lewis	Fxd	6' 0"	2	36' 0"	20' 1"	.....	157.1	11.6
28	Grumman G-73	PA	783	1-2	10	380	91	20	P&W R1340-S3H1	2	600-2250	Ham	FF	8' 3"	3	66' 8"	48' 4"	18' 9"	444.0	27.4
29	Lockheed 649A-79	PC-L	763	6	60	4690	100/130	220	Wrt 749C18BD1	4	2500-2800	H-C	Rev	15' 1"	3	123' 0"	95' 1"	23' 0"	1650	99.6
30	749A-79	PC-L	763	7	49	5820	100/130	220	Wrt 749C18BD1	4	2500-2800	H-C	Rev	15' 1"	3	123' 0"	95' 1"	23' 0"	1650	99.6
31	Martin 2-0-2	PL	...	3-4	36	1350	100/130	...	P&W R2800CA18	2	2400-2500	Ham	Rev	13' 1"	3	93' 3⅜"	74' 7"	28' 5⅝"	864.0	.....
32	Monsted-Vincent MV-1	PL	...	1	5	172	73	7	Cont C90	4	90-2575	Sen	....	6' 0"	2	48' 0"	34' 0"	13.2	288.0	24.1
33	Northrop N-32	CL	...	2	N	1800	100	72	Wrt 1820-99	3	1200-....	H-C	C-Ff-Fr	12' 6"	3	86' 8"	67' 1"	23' 1.8"	1131.77	40.1
34	Piper PA-18 "95"	PL-S	1A2	1	1	18	73	1¼	Cont C-90-8F	1	90-2475	Sen	Fxd	6' 0"	2	35' 2½"	22' 4"	.....	178.5	18.6
35	PA-18 "105"	PL-S	1A2	1	1	18	73	1¼	Lyco O-235-C1	1	108-2600	Sen	Fxd	6' 2"	2	35' 2½"	22' 7"	.....	178.5	18.6
36	PA-20 "115"	PL-S	...	1	3	36	80	1½	Lyco O-235-C1	1	108-2600	Sen	Fxd	6' 2"	2	29' 3⅝"	20' 5"	6' 2"	147.5	13.2
37	PA-20 "125"	PL-S	...	1	3	36	80	1½	Lyco O-290-D	1	....	Sen	Fxd	6' 2"	2	29' 3⅝"	20' 5"	.....	147.5	13.2
38	Ryan Navion A	PL	782	1	3	40	80	2½	Cont E-185-3	1	205-....	Har	Cnt	7' 0"	2	33' 4½"	27' 3"	8' 7⅝"	185.0	20.9
39	Temco GC-1B	PL	766	1	1	27½	80	1¾	Cont C125-2	1	125-2550	AS-Be	F-C-Cnt	6' 1"	2	29' 4"	20' 10¾"	6' 1"	131.6	9.6
40	TE-1A	PL		1	1	28½	80	2	Cont C145-2H	1	145-2700	Aero	C-CS	6' 2"	2	29' 2"	21' 8"	6' 1½"	134.0	9.6
41	Thorp T-11	PL	781	1	1	18	73	1	Lyco O-145-B2	1	65-2800	Sen	Fxd	5' 6"	2	25' 0"	17' 6"	7' 7"	105.0	6.6

ABBREVIATIONS

*—Each **—With 38600 lb. load
†—With 121700 lb. weight
††—With 40500 lb. load +—Plus
‡—At 1900 B.H.P. and 13500 lb. take-off weight
*—At take-off ♦—With gross load
◆◆—Propeller diameters—70, 72 or 74 inch

§—Gallons instead of pounds
(a)—Not including fuel and oil
(aa)—Propeller diameters—68½, 70 or 72 inch
(bb)—Propeller diameters—69½, 70, 71 or 72 inch
(cc)—Propeller diameters—70 or 72 inches
(d)—Dual
(m)—Operating weight, empty

(r)—Max. range, no reverse or headwind—10,000 miles
(w)—Without residual fuel and oil
Aero—Aeromatic propeller or equivalent
A-S—Aeromatic or Sensenich
Be—Beach
C-Ff-Fr—Constant speed, fast feathering, fast reversing
C-CS—Automatic controllable constant speed

CL—Cargo land plane
Cnt—Controllable
Cont—Continental Motors Corp.
Cst—Constant
Curt—Curtis **Ele**—Electric
F-C—Fixed with Sensenich, constant with Aeromatic
FF—Full feathering
F-S-L—Fixed swivel, lockable

For Directory of the Manufacturers listed above, see page 63.

Revenues of Domestic Scheduled Air Carriers*

In Thousands of Dollars

Year	Passenger	Mail	Express and Freight	Excess Baggage	Other	Total Revenues
1938	$24,861	$15,873	$1,278	$283	$625	$42,921
1939	34,844	18,492	1,619	346	657	55,948
1940	53,308	20,090	2,078	551	836	76,864
1941	69,791	22,696	2,919	765	1,139	97,311
1942	74,819	23,470	6,978	1,260	1,722	108,249
1943	87,481	24,213	8,382	1,720	1,309	123,105
1944	116,441	33,317	8,306	2,030	833	160,928
1945	166,520	33,693	10,835	2,298	1,396	214,743
1946	275,593	20,982	13,620	2,993	3,044	316,233
1947	308,576	29,445	19,378	3,572	3,869	364,840
1948	343,290	59,309	24,372	3,953	3,371	434,295

* Civil Aeronautics Administration

AND PRIVATE AIRCRAFT

WEIGHTS (Lb.)							PERFORMANCE									MAIN LANDING GEAR		Auxiliary Gear					
Empty	Gross	Gross Landing	Pay Load	Useful Load	Wing Loading (Lb. per Sq. Ft.)	Power Loading (Lb. per Hp.)	Maximum Speed at Altitude	Cruising Speed at Altitude	Fuel Consumption at Cruising Speed (Lb. per Hr.)	Range in Miles at Cruising Speed	Stalling Speed at Sea Level (m.p.h.)	Initial Climb (Ft. per Min.)	Service Ceiling with Normal Load (Ft.)	Take-off Distance (Over 50 ft. obstacle no wind) (Ft.)	Landing Distance (Over 50 ft. obstacle no wind) (Ft.)	Retractable	Method of Retraction	Tail or Nose Wheel	Retractable	Type	Tread (Ft., In.)	Brake Type	Line Number
750(a)	1220	1220	....	470	7.17	18.8	100-SL	90-SL	27.0	290	38	500	12000	....	....	N	....	Tail	N	....	5' 10"	Mec	1
785(a)	1220	1220	....	435	7.17	14.3	100-SL	91-SL	32.4	220	40	850	16300	575	600	N	....	Tail	N	....	5' 10"	Mec	2
820(a)	1350	1350	....	530	7.70	15.9	100-SL	95-SL	32.4	400	38	600	15600	1294	1172	N	....	Tail	N	....	6' 0"	Mec	3
790	1350	1300	....	560	7.64	15.3	103-SL	92-SL	32.4	315	44	750	16000	500	550	N	....	Tail	N	Ste	5' 10"	Mec	4
877	1450	1450	....	573	8.30	16.1	106-SL	95-SL	33.6	410	48	600	13000	750	750	N	....	Tail	N	Ste	5' 10"	MH	5
790	1350	1350	....	560	7.72	15.0	107-SL	95-SL	34.0	310	45	750	15000	600	650	N	....	Tail	N	Ste	5' 10"	Hyd	6
1150	2050	2050	....	900	10.25	14.1	120-SL	105-SL	51.0	445	53	600	12400	900	900	N	....	Tail	N	SS	....	Hyd	7
2150	3600	....	....	1350	16.80	12.0	180-10000	160-10000	110.0	750	57	1200	18000	....	....	Y	Hyd	Nose	Y	Swi	13' 2"	Hyd	8
1575(w)	2650	2650	822	1075	14.92	16.0	184-SL	170-8000	80.0	750	56	890	17100	1690	1155	Y	Ele	Nose	Y	SS-Swi	9' 7½"	Hyd	9
1901	2650	2650	....	749	14.92	12.92	180-SL	165-10000	60.0	825	55	1000	17200	975	750	Y	Ele	Nose	Y	Ste	9' 7½"	Hyd	10
5615	8750	8750	....	3115	25.1	9.7	230-5000	211-10000	285.0	908	77	1190	20600	1760	1460	Y	Ele	Tail	Y	Sw-L	12' 11"	Hyd	11
83500	142500	121700	30000	57328	81.4	10.2	375-25000†	320-25000†	3520	4100‡	101	1130▲	30000+	3950▲	3520	Y	Ele	Nose	Y	Ste	28' 6"	Hyd	12
73105	147000	121700	43000	66895	81.4	10.2	375-25000†	320-25000†	3520	4100‡	101	1040▲	30000+	3950▲	3520	Y	Ele	Nose	Y	Ste	28' 6"	....	13
1020	1550	1550	....	530	8.53	12.4	112-SL	102-SL	47.3	350	45	1000	17500	800	500	N	....	Tail	N	SS	8' 0"	Hyd	14
756	1300	....	550	479	....	....	112-SL	100-SL	....	379	40	750	16500	....	....	N	....	....	....	....	....	Tee	15
900	1500	1500	430	580	9.75	16.7	125+	105+	33.0	450	41	640	15500	1645	1530	N	....	Tail	N	SS	6' 5"	Hyd	16
2050	3350	3350	780	1300	15.3	14.0	170-7000	160-7000	88.0	700+	62.5	1050	16000	1670	1495	N	....	Tail	N	SS	7' 11"	Hyd	17
2060	3350	3350	770	1290	15.3	11.1	180-7000	165-7000	88.0	700+	62.5	1200	18300	1500	1495	N	....	Tail	N	SS	7' 11"	Hyd	18
1200	2200	2200	780	1000	12.8	15.5	140+	120+	48.0	450	55	890	15500	1820	1755	N	....	Tail	N	SS	7' 2"	Hyd	19
27120	40500	38600	8150	13380	49.6	8.5	347-16000	272-16000	1070	920	89	1000	30000	3900††	2280**	Y	Hyd(d)	Nose(d)	Y	St-L	28' 0"	Hyd	20
51311(m)	100000	85000	28689	50233	68.4	10.0	364-18600	316-20000	2390	2560	93.5	1130	27000	3540	3010	Y	Hyd	Nose	Y	Ste	24' 8"	Hyd	21
54098(m)	91300	78000	14650	39842	62.4	10.9	358-19600	309-20000	2390	2500	89.5	1260	27000	4580	2790	Y	Hyd	Nose	Y	Ste	24' 8"	Hyd	22
56216(m)	97200	80000	12500	43577	66.4	10.1	356-19600	307-20000	2390	2490	90.7	1100	28500	3980	2860	Y	Hyd	Nose	Y	Ste	24' 8"	Hyd	23
56491(m)	100000	85000	16000	46483	68.4	10.0	364-18600	316-20000	2390	2560	93.5	1130	27000	3540	3010	Y	Hyd	Nose	Y	Ste	24' 8"	Hyd	24
20691(m)	31000	30000	7670	11463	32.0	10.5	270-5900	242-10000	800	1425	77	1300	22100	2510	2490	Y	Hyd	Tail	Y	Swi	18' 6"	Hyd	25
21175(m)	30500	30000	7670	10670	31.5	10.5	270-9500	235-10000	755	1530	77	1250	22100	2610	2400	Y	Hyd	Tail	Y	Swi	18' 6"	Hyd	26
890	1350	1350	460	460	8.0	15.9	112+-SL	100+-SL	29.1	400	37	800	15000	350	287	N	....	Tail	N	F-S-L	6' 0"	Hyd	27
9200	12750	12750	....	3550	28.7	10.6	215-6000	180-8000	312.0	1330	71	1290	23000	2768	2715	Y	Hyd	Nose	Y	Swi	12' 10"	Hyd	28
63900(m)	98000	89500	20900	38700	59.3	9.8°	354-19200	323-23000	2900	3700	91	1370	24700	3270	2880	Y	Hyd	Nose	Y	Ste	28' 0"	Hyd	29
65700(m)	107000	89500	19100	47150	64.8	10.7°	354-19200	323-23000	2900	4490	91	1234	23800	3680	2880	Y	Hyd	Nose	Y	Ste	28' 0"	Hyd	30
29500(m)	43000	41000	10500	15100	....	....	311-14000	290-16000	....	2600(r)	78	....	....	1800	1860	Y	....	Nose	Y	Ste	....	....	31
3285	5000	5000	1329	1715	17.38	13.8	165-6000	155-6000	124.8	1000+	53	1000	....	....	....	Y	Hyd	Nose	Y	....	....	Hyd	32
26690	38000	38000	....	11310	33.6	10.55	201-5200	169-5200	720	2080	69	1155	....	1310	920	N	....	Tail	N	Sw-L	23' 5"	Hyd	33
850	1500	....	....	650	8.4	16.7	110-SL	100-SL	30	380	44	624	13600	1151	1120	N	....	Tail	N	Ste	6' ½"	Hyd	34
884	1500	....	....	616	8.4	13.9	115-SL	105-SL	42	270	44	780	15750	960	1120	N	....	Tail	N	Ste	6' ½"	Hyd	35
825	1650	....	....	825	11.2	16.2	125-SL	112-SL	38	480	50	600	11000	720	600	N	....	Tail	N	SS	6' 0"	Hyd	36
980	1800	....	....	820	12.2	14.4	133-SL	126-SL	47	560	48	820	12500	1798	1187	N	....	Tail	N	SS	6' 0"	Hyd	37
1730	2790	....	780	1020	14.6	14.6	163-SL	155-	10.5§	500	54	900	15600	875	710	Y	Hyd	Nose	Y	Ste	6' 8½"	Hyd	38
1187	1710	1710	194	523	13.0	13.7	150-SL	140-SL	48.0	425	48	1000	16000	685	380	Y	Hyd	Tail	N	SS	9' 9"	....	39
1305	1900	1900	....	595	14.2	13.1	140-SL	135-5000	42.0	470	56	900	13500	895	640	Y	Hyd	Tail	N	SS	9' 8½"	Hyd	40
565	1050	1050	200	485	10.0	16.1	115-SL	108-7000	25.0	400	46	600	12000	800SL	800SL	N	....	Nose	N	Ste	7' 2"	Hyd	41

Fxd—Fixed
Ham—Hamilton Standard Propellers Div.
Har—Hartzell propellers
H-C—Hamilton or Curtis
Hyd—Hydraulic
Hyd-Mc—Hydromatic
Jac—Jacobs
L-H-S—Lewis, Hartzell or Sensenich propeller
Lyco—Lycoming Div., The Aviation Corp.
Mec—Mechanical
MH—Mechanical or hydraulic
N—No or None
PA—Passenger Amphibian
PC-L—Passenger and Cargo, Land Plane
PL—Passenger Land Plane
PL-S—Passenger Land or Seaplane
P&W—Pratt and Whitney
Rev—Reversible pitch
R-FF—Reversible—full feathering
Sen—Sensenich
S-F-M—Sensenich, Fahlin, or McCauley propeller
SL—Sea level
S-L-M—Sensenich, Lewis or McCauley propeller
S-M—Sensenich or McCauley propeller
SS—Swivel and steering
Ste—Steering
St-L—Steering, lockable
Swi—Swivel
Sw-L—Swivel, lockable
Wrt—Wright
Y—Yes

For Directory of the Manufacturers listed above, see page 63.

Passenger-Miles on Scheduled Domestic Airlines and on Pullman Cars*

Mileage Figures in Thousands

Year	Passenger Miles: Pullman	Passenger Miles: Airline	Airline as Per Cent of Pullman	Year	Passenger Miles: Pullman	Passenger Miles: Airline	Airline as Per Cent of Pullman
1930	12,515,000	82,125	0.7	1940	8,213,879	1,157,900	14.1
1931	9,892,000	106,952	1.1	1941	10,070,407	1,506,303	15.0
1932	6,758,000	127,433	1.9	1942	19,071,589	1,501,279	7.9
1933	6,141,987	174,820	2.8	1943	25,891,466	1,670,935	6.5
1934	6,881,002	189,806	2.8	1944	28,267,081	2,211,905	7.8
1935	7,146,270	316,336	4.4	1945	27,275,789	3,408,290	12.5
1936	8,354,840	438,969	5.3	1946	20,672,367	6,068,315	29.4
1937	9,170,428	481,116	5.2	1947	13,515,792	6,397,683	46.7
1938	8,269,882	560,060	6.8	1948	12,171,625	6,227,932	51.2
1939	8,485,399	755,118	8.9				

* Civil Aeronautics Administration

AMERICAN INTEGRAL

Line Number	Bus Make and Model		Passenger Rating	Type (City Service, Parlor, etc.)	Standard Wheelbase (In.)	Overall Length (In.)—Bumper to Bumper	Inside Length (In.)—Passenger Compartment	Tread (In.)—Front and Rear	Complete Vehicle Weight—Dry (Lb.)	Standard Tire Size (In.)—Front and Rear	Engine: Make and Model	Cycle and Fuel	Location	Number of Cylinders—Bore and Stroke (In.)	Displacement (Cu. In.)	Rated Horsepower (A.M.A.)	Maximum Brake Hp. at Governed R.P.M.	Maximum Net Torque (Lb. Ft.) at Specified R.P.M.	Compression Ratio—to 1	Compression Pressure—(Lb.) at Specified R.P.M.	Valve Arrangement	Oiling System: Pressure to—
			GENERAL								ENGINE											
1	ACF-Brill	IC-41	37-41	IC	270	419½	408	80¼-71	20600	11.00/22	HS 190-2	4-G	UF	6-5¼x6	779	66.2	220-2200	625-1300	5.60		I	acdfg
2		C-27	27	CS	163	311	296	82¼-74	10600	8.25/20	Int. RED 361	4-G	TR	6-4⅛x4½	361	40.8	126-2800	282-1200	6.30		I	abcdfg
3		C-31	31	CS	196	344	329	81¾-74	11300	9.00/20	Int. RED 401	4-G	TR	6-4⅛x5	401	40.8	140-2800	315-1200	6.30		I	abcdfg
4		C-36	36	CS	198½	360½	356	79 9/16-71	14800	10.00/20	HS 477-2	4-G	UF	6-4½x5	477	48.6	160-2400	370-1600	6.00		I	acdfg
5		C-44	44	CS	249	420	407	80¼-71	17500	11.00/20	HS 180-1	4-G	UF	6-5x6	707	60.0	208-2200	540-1200	6.00		I	acdfg
6		C-44	45	Sub	249	420	407	80¼-71	18900	11.00/20	HS 190-2	4-G	UF	6-5¼x6	779	66.2	220-2200	625-1300	5.60		I	acdfg
7		C-48	48	CS	247	474	462	88 1/16-74¼	19200	12.00/20	HS 190-2	4-G	UF	6-5¼x6	779	66.2	220-2200	625-1300	5.60		I	acdfg
8	Aerocoach	P-372	37	IC	229	407¾	389	80¾-72½	17000	10.00/20	Cont. U6501	4-G	TR	6-4½x5¼	501	48.6	170-2400	380-1200	5.90		I	abcdf
9		P-411	41	IC	261	420	405¾	79 9/16-71	20000	11.00/20	Cont. 56749	4-G	TR	6-5⅜x5½	749	69.3	240-2500	575-1400	5.73		I	abcdf
10		T-361	36	CS	210½	367	352	80¾-71½	16000	10.00/20	Cont. U6501	4-G	TR	6-4½x5¼	501	48.6	170-2500	385-1500			I	abcdf
11		T-451	45	CS	263½	420	405	80⅛-71	17000	11.00/20	Cont. R6572	4-G	TR	6-4⅝x5⅜	572	54.0	205-2500	485-1400	6.75		I	abcdf
12	Beaver	27PT	29	CS	154	321½	156	80¼-69¾	11500	8.25/20	Int. BLD269	4-G	R	6-3 7/16x4½	269	35.0	101-3000	220-1000	6.30	114-160	I	abc
13		B-31PT	33	CS	164	331	169	80¼-69¾	12800	9.00/20	Int. RD361	4-G	R	6-4⅛x4½	361	44.0	126-2800	282-1200	6.30	118-160	I	abcdfg
14		B-35PT	37	CS	195⅝	354	192	80¼-69¾	13500	9.00/20	Int. RD450	4-G	R	6-4⅜x5	451	52.0	148-2600	362-1000	6.30	122-160	I	abcdfg
15	Beck	Steeliner	24	IC	190	322	262	76-68		8.25/20	Int. BLD269	4-G	Fr	6-3 7/16x4½	269	30.4	100-3000	220-1000	6.13		I	abcdfg
16		Mainliner	33	IC	220	396	323	81¼-69¾		10.00/20	Int RED450	4-G	R	6-4⅜x5	450	45.9	140-2400	350-1000	6.30		I	abcdfg
17		Mainliner Series II	37	IC	220	420	380	80⅛-71½		11.00/20	I-C R6586	4-G	R	6-4 11/16x5⅜	586	56.6	200-2600	475-1000	6.00	120-150	I	abcd
18		Luxury Liner	37	IC	220	420	356	80¼-71½		11.00/20	Cum. HRB600	4-D	R	6-5⅛x6	743	63.1	165-1800	540-1000	15.50		I	abcd
19	Cub	16-S	16	IC	160	271	197	61¼-60¼	5960	7.50/17	Ford 9H-J	4-G	Fr	6-3.3x4.4	226	26.4	95-3300	180-1200	6.80	110-60	L	acd
20		19-T	19	CS	160	271	197	61¼-60¼	5960	7.50/17	Ford 9H-J	4-G	Fr	6-3.3x4.4	226	26.4	95-3300	180-1200	6.80	110-60	L	acd
21	Fitzjohn	Cityliner	33-36	CS	165¼	334	320	82¾-69¾	12000	10.00/20	Her. JXLD	4-G	Fr	6-4x4½	339	38.4	131-3000	272-1400	7.00		L	abcdg
22		Duraliner	28	IC	185¾	321¾	286	77¾-65¼	12000	9.00/20	Her. JXLD	4-G	Fr	6-4x4½	339	38.4	131-3000	272-1400	7.00		L	abcdg
23	Flexible	37C1-50	37	IC	231	418½	356	80¼-71½	17250	10.00/20	Che.▲ LM-235	4-G	R	▲6-3 9/16x3 15/16	470	60.8	186-3400	384-††	6.62		I	adf
24		25B1-50	25	IC	182	359¾	252	80½-69¾	12800	9.00/20	Bui. FB320	4-G	R	8-3 3/32x4 5/16	320	37.8	144-3400	278-2200	6.70		I	acdf
25		25C1-50	25	IC	182	359¾	252	76-69¾	11330	8.25/20	Che. LM-235	4-G	R	6-3 9/16x3 15/16	235	30.4	93-3400	192-††	6.62		I	adf
26		23B3-50	23	IC	218	395½	288	80½-69¾	13450	9.00/20	Bui. FB320	4-G	R	8-3 3/32x4 5/16	320	37.8	144-3400	278-2200	6.70		I	acdf
27		29B1-50	29	IC	218	395½	288	80½-69¾	13390	9.00/20	Bui. FB320	4-G	R	8-3 3/32x4 5/16	320	37.8	144-3400	278-2200	6.70		I	acdf
28		23B2-50	23	IC	218	395½	288	80½-69¾	13450	9.00/20	Bui. FB320	4-G	R	8-3 3/32x4 5/16	320	37.8	144-3400	278-2200	6.70		I	acdf
29		21C1-50	21	IC	146	323¾	216	76-69¾	10600	8.25/20	Che. LM-235	4-G	R	6-3 9/16x3 15/16	235	30.4	93-3400	192-††	6.62		I	adf
30		33B7-50	33		212	395½	288	80½-69¾	13265	9.00/20	Bui. FB320	4-G	R	8-3 3/32x4 5/16	320	37.8	144-3400	278-2200	6.70		I	acdf
31		21B1 & 29B6-50	21	IC	146	323¾	252	80½-69¾	11140*	8.25/20	Bui. FB320	4-G	R	8-3 3/32x4 5/16	320	37.8	144-3400	278-2200	6.70		I	acdf
32		29HD1-50	29	IC	218	395¾	288	80½-69¾	15100	9.00/20	Her DWXLD	4-D	R	6-4¼x5	426	43.3	142-2600	330-1700	15.0		I	abcd
33	GMC	PDA3703	37	IC	239	420	366	80½-72½	16820	10.00/20	Own 4-71	2-D	R	4-4¼x5	284	28.9	147-2000	425-1200	17.1	500-1000	I	abcdfg
34		PDA4101	41	IC	247	420	387	79 9/16-70½	18056	11.00/20	Own 6-71	2-D	TR	6-4¼x5	426	43.3	200-2000	600-1200	17.1	500-1000	I	abcdf
35		TGH2708	27	CS	151½	296⅝	258	81¼-75¼	9060	8.25/20	Own 270	4-G	TR	6-3 13/16x4	270	34.3	107-3200	207-1000	6.75	165-1000	I	abcdf
36		TGH-3101	31	CS	180½	325⅝	287	81¼-75¼	9430	8.25/20	Own 270	4-G	TR	6-3 13/16x4	270	34.3	107-3200	207-1000	6.75	165-1000	I	abcdf
37		TDM3209	32	CS	182¼	341¼	308	80 13/16-72½	13885	9.00/20	Own 4-71	2-D	TR	4-4¼x5	284	28.9	133-2000	400-1200	17.1	500-1000	I	abcdfg
38		TGM3209	32	CS	182¼	341¼	308	80 13/16-72½	13264	9.00/20	Own 503	4-G	TR	6-4 9/16x5⅛	503	49.9	177-2800	410-1200	6.5	150-1000	I	abcdfgh
39		TDM3612	36	CS	210½	360½	337	80 13/16-72½	14380	9.00/20	Own 4-71	2-D	TR	4-4¼x5	284	28.9	133-2000	400-1200	17.1	500-1000	I	abcdfg
40		TGM3612	36	CS	210½	360½	337	80 13/16-72½	13742	9.00/20	Own 503	4-G	TR	6-4 9/16x5⅛	503	49.9	177-2800	410-1200	6.5	150-1000	I	abcdfgh
41		TDM4010	40	CS	238¾	396	366	79 9/16-72½	15760	10.00/20	Own 6-71	2-D	TR	6-4¼x5	426	43.3	170-2000	545-1000	17.1	500-1000	I	abcdfgh
42		TDM4509	45	CS	238¾	420	390	79 9/16-72½	16206	10.00/20	Own 6-71	2-D	TR	6-4¼x5	426	43.3	170-2000	545-1000	17.1	500-1000	I	abcdfgh
43		TDH3209	32	CS	182¼	341¼	308	80 13/16-72½	13790	9.00/20	Own 4-71	2-D	TR	4-4¼x5	284	28.9	133-2000	400-1200	17.1	500-1000	I	abcdfg
44		TGH3209	32	CS	182¼	341¼	308	80 13/16-72½	13496	9.00/20	Own 503	4-G	TR	6-4 9/16x5⅛	503	49.9	177-2800	410-1200	6.5	150-1000	I	abcdfgh
45		TDH3612	36	CS	210½	360½	337	80 13/16-72½	14275	9.00/20	Own 4-71	2-D	TR	4-4¼x5	284	28.9	133-2000	400-1200	17.1	500-1000	I	abcdfg ‡
46		TGH3612	36	CS	210½	360½	337	80 13/16-72½	13980	9.00/20	Own 503	4-G	TR	6-4 9/16x5⅛	503	49.9	177-2800	410-1200	6.5	150-1000	I	abcdfgh
47		TDH4010	40	CS	238¾	396	366	79 9/16-72½	15645	10.00/20	Own 6-71	2-D	TR	6-4¼x5	426	43.3	170-2000	545-1000	17.1	500-1000	I	abcdfgh
48		TDH4509	45	CS	238¾	420	390	79 9/16-72½	16066	10.00/20	Own 6-71	2-D	TR	6-4¼x5	426	43.3	170-2000	545-1000	17.1	500-1000	I	abcdfgh
49	Kalamazoo		29	IC	194	316		70-66		8.25/20	Int K-7	4-G	Fr	6-3 7/16x4½	269	30.4	101-3000	222-1600	6.30		I	abcdf
50			21-27	CIC	180	201		70-66		7.50/20	Int K-7	4-G	FH	6-3 7/16x4½	269	30.4	101-3000	222-1600	6.30		I	abcdf
51	Mack	C33	33	CS	180	344	313	79⅞-71⅞	15980	10.00/20	Own EN510A	4-G	TR	6-4 7/16x5½	510	47.3	158-2400	403-1000	6.07	135-1000	I	acdeh
52		C37	37	CS	213¾	377⅞	346¾	79⅞-71⅞	16530	10.00/20	Own EN510A	4-G	TR	6-4 7/16x5½	510	47.3	158-2400	400-1000	6.07	135-1000	I	acdeh
53		C41—	41	CS	237½	398	368⅝	80 1/16-71½	18220	11.00/22	Own EN672	4-G	TR	6-4⅞x6	672	57.0	187-2000	535-1150	6.15	146-1000	I	acdeh
54		C41—Diesel	41	CS	237½	398	368⅝	80 1/16-71½	18570	11.00/22	Own END672	4-D	TR	6-4⅞x6	672	57.0	165-2000	480-1200	14.6	450-1000	I	acdeh
55		C-45—	45	CS	261½	420	390⅝	80 1/16-71½	18820	11.00/22	Own EN672	4-G	TR	6-4⅞x6	672	57.0	187-2000	535-1150	6.15	146-1000	I	acdeh
56		C45—Diesel	45	CS	261½	420	390⅝	80 1/16-71½	19170	11.00/22	Own END672	4-D	TR	6-4⅞x6	672	57.0	165-2000	480-1200	14.6	500-1000	I	acdeh
57		C33—Diesel	33	CS	180	344	313	79⅞-71⅞	16280	10.00/20	Own END510	4-D	TR	6-[illegible]	510	47.3	138-2400	368-1400	14.9	460-1000	I	acdeh
58		C37—Diesel	37	CS	213¾	377⅞	346¾	79⅞-71⅞	16830	10.00/20	Own END510	4-D	TR	6-4 7/16x5½	510	47.3	138-2400	368-1400	14.9	460-1000	I	acdeh
59	Reo	37-TB	37-40	CS	186	373 1/16	333½	80-69⅞	13150	10.00/20	Cont. TH6427	4-G	UF	6-4 7/16x4⅝	427	44.6	146-2600	334-1300	6.05	110-150	I	acdfgh
60		37-CB	37-40	CS	186	373 1/16	333½	80-69⅞	13150	10.00/20	Cont. TH6427	4-G	UF	6-4 7/16x4⅝	427	44.6	146-2600	334-1300	6.05	110-150	I	acdfgh
61	Southern Coach	F-31	32	CS	175	321½	305	81¼-69¾	12800	9.00/20	Wau. 6MZA	4-G	UF	6-4¼x4¾	404	43.4	115-2200	305-1300	5.90		L	abcdegh
62		F-35	35	CS	196	356½	340	81¼-69¾	13500	10.00/20	Wau. 6MZA	4-G	UF	6-4¼x4¾	404	43.4	115-2200	305-1300	5.90		L	abcdegh
63		F-41	41	CS	222½	391½	375	80¼-72	15650	11.00/20	Wau. 140GK	4-G	UF	6-4½x5½	525	46.6	170-2400	435-800	6.40		I	abcdfg
64	Transit	91	31	CS	179	352½	301	81-73	13300	9.00/20	Cont. B6427	4-G	TR	6-4 7/16x4⅝	427	44.7	127-2800	325-1200	5.70		L	abcdgh
65	Twin Coach	34-S	34	CS	189		300	80-73¼	12900	10.00/20**	Own FTC180	4-G	UF	6-4¼x4¾	404	43.4	180-2800	380-1600	7.30	165-120	I	abc
66		38-S	37	CS	189		322½	80-73¼	13550	10.00/20**	Own FTC180	4-G	UF	6-4¼x4¾	404	43.4	180-2800	380-1600	7.30	165-120	I	abc
67		41-S	40	CS	211½		345½	80 13/16-73¼	14300	11.00/20**	Own FTC180	4-G	UF	6-4¼x4¾	404	43.4	180-2800	280-1600	7.30	165-120	I	abc
68		34-SW	34	CS	189		300	88½-81¼	13400	10.00/20**	Own FTC180	4-G	UF	6-4¼x4¾	404	43.4	180-2800	380-1600	7.30	165-120	I	abc
69		44S	44	CS	218		367½	80 13/16-73¼	15000	11.00/20**	Own FTC180	4-G	UF	6-4¼x4¾	404	43.4	180-2800	380-1600	7.30	165-120	I	abc
70		58D	58	CS	^	864	513½	80 13/16-73¼	21600	10.00/20	Own▲FTC180	4-G	UF	▲6-4¼x4¾	404	43.4	180▪-2800	380▪-1600	8.00	165-120	I	acf
71		50S	50	CS	240			80 13/16-73¼	16500	11.00/20**	Own FTC180	4-G	UF	6-4¼x4¾	404	43.4	180-2800	380-1600	7.30	165-120	I	abcd
72	White	1136 & 1136-10	36-37	CSS	191	380‡		82 1/16-71¾	16135	10.00/20	Own 280TA	4-G	UF	6-4⅝x5	504	51.3	175-2800	410-1400	6.50		L	abcdh
73		1140 & 1140-10	40-41	CSS	214	395‡		82 1/16-71¾	16655	11.00/20	Own 280TA	4-G	UF	6-4⅝x5	504	51.3	175-2800	410-1400	6.50		L	abcdh
74		1144 & 1144-10	§44	CSS	238	419‡		82 1/16-71¾	17300	11.00/20	Own 24A	4-G	UF	12-4⅛x4¼	681	81.7	210-2800	500-1400	6.10		L	abcdh

ABBREVIATIONS

♦♦—Torque Converter.
°—Wet Weight.
•—Hundred R.P.Ms.
▪—Each Engine.
▲—Two used.
§—City 44—Suburban 42 or 45.
‡‡—Torque Converter optional.
††—800-2000 R.P.M.
**—9.00/20 Rear.
†—Front 14⅞; Rear 15.
‡—There are 4 front and 4 rear springs of dimensions shown, each with 6 leaves.
¶—Front 18, Rear 16½.
^—189" Front to Center Wheel; 195" Center to Rear Wheel.
*—Weight for 21B1, 13895 for 29B6.
a—Main Bearings.
A—Air Pressure (Brakes).
AL—Electric Auto-Lite.
b—Wrist Pins.
BB—Borg & Beck.
(bb)—1200 to 1800 rpm.
BL—Brown-Lipe (Spicer Mfg. Corp.).
Bos—American Bosch Corp.
Bui—Buick Motors Div.
c—Connecting Rods.
Ce—Centrifugal.
Car—Carter Carburetor Corp.
Che—Chevrolet Motor Div.
Cla—Clark Equipment Co.
CIC—City Service and Intercity.
Cont—Continental Motors Corp.
CS—City service.
CSS—City service and Suburban.
Cum—Cummings Engine Co.
d—Camshaft.
D—Diesel or heavy oil.
DD—Dual Downdraft.
Dn—Downdraft.
DR—Delco-Remy Div.
Ds—Drive Shaft.
e—Accessory Drive.
f—Valve Lifters or Rocker Arms and Shafts.
Fo—Ford Motor Co.

For Directory of the Manufacturers listed above, see page 63.

BUSES

Fuel System: Carburetor or Injector Pump — Make and Type	Size (In.)	Tank Capacity (Gal.)	Electrical System: Ignition System—Make	Generator and Starter—Make	Battery: Voltage and Amp. Hours Capacity	Governor: Type	Max. Governed Speed—M.P.H.	Clutch—Make and Size (In. diam.)	Transmission: Make	No. of Forward Speeds	Low Speed Ratio—to 1	Type	Universals: Number	Size of Series	Rear Axle: Make and Model	Standard Gear Ratio—to 1	Brakes, Service: Type of Applicator	Total Lining Area (Sq. In.)	Drum Diam. (In.)	Operates on—	Hand: Total Lining Area (Sq. In.)	Springs, Front: No. of Leaves	Length and Width (In.)	Rear: No. of Leaves	Length and Width (In.)	Running Gear: Front Axle—Make	Steering Gear—Make	Outside Diameter of Min. Turn. Circle (Ft.)	Line Number
Zen Up	2	120	DR	DR	12-158♦	Ce	68	Lg 17	Spi	4	4.36	M	2	1700	Tim 59071W	4.11	A	896	16½	Ds	127	‡	88-4	‡	76-4	Tim	Ro	82	1
Hol Up	1¼	65	DR	LD	12-158	Va	48	BB 14	Cla	3	4.06	M	2	1500	Tim 56434W	6.17	A	533	14½	Ds	85	11	60-3	12	64-3	Cla	Ro	61	2
Hol Up	1¼	65	DR	LD	12-158	Va	50	BB 14	Cla	3	4.06	M	2	1500	Tim 56434W	6.17	A	533	14½	Ds	85	12	60-3	12	64-3	Cla	Ro	67	3
Zen Up	2	88	DR	LD	12-158	...	45	...	Spi**	If	...	H	2	1600	Tim 58285W	6.17	A	690	16½	Ds	101	‡	80-4	‡	72-4	Tim	Gem	72	4
Zen Up	2	107	DR	LD	12-158	...	52	...	Spi**	If	...	H	2	1700	Tim 59070W	5.14	A	830	16½	Ds	127	‡	86-4	‡	76-4	Tim	Ro	85	5
Zen Up	2	107	DR	LD	12-158	Ce	64	Lg 17	Spi	4	4.36	M	2	1700	Tim 59070W	4.11	A	830	16½	Ds	127	‡	86-4	‡	76-4	Tim	Ro	85	6
Zen Up	2	120	DR	DR	12-158♦	...	52	...	Spi**	If	...	H	2	1700	Tim R-110-DPA	5.57	A	848	15	Ds	127	12	62-4	14	68-5	Tim	Ro	71	7
Zen Do	2	100	DR	DR	12-180	Su	65*	Lg 14	Cla	5	5.22	M	2	1600	Tim 58433	4.55	A	760	16½	Ds	73	10	61-4	11	64½-4	Tim	Ro	83	8
Zen Do	1¾	150	DR	LD	12-180	Su	73	Lg 17	Spi	4	3.94	M	2	1700	Tim R100	4.11	A	850	15	Ds	65	...	Special	...	Special	Tim	Ro	...	9
Zen Do	2	...	DR	LD	12-180	Su	48	Spi 14	Spi**	If	6.60	H	2	1600	Tim L110B	6.16	A	636	15	Ds	60	...	Special	...	Special	Tim	Ro	68	10
Zen Do	1¾	100	DR	LD	12-180	Su	49	Spi 16	Spi**	If	6.60	H	2	1700	Rim R110	6.16	A	850	15	Ds	65	...	Special	...	Special	Tim	Ro	83	11
Car Do	1¼	65	DR	DR	12-158	...	53	Roc 11	Spi	4	4.57	M	2	1500	Tim H110P	6.16	A	616	16½	Ds	45	10	60-3	16	60-3	Tim	Ro	55	12
Zen Up	1½	65	DR	DR	12-158	Su	61	Roc 14	BL	3	3.96	M	2	1500	Tim H110	5.28	A	636	16½	Ds	45	14	60-3	16	60-3	Tim	Ro	59	13
Zen Up	1¾	65	DR	DR	12-158	Su	57	Roc 14	BL	3	3.96	M	2	1500	Tim L110	5.28	A	636	16½	Ds	45	14	60-3	16	60-3	Tim	Ro	61	14
Zen Do	...	40	DR	DR	12-	...	Ng	Roc 11	Fu	5	6.52	M	4	5-C	Tim 53588TW-X	5.14	A	417	...	Ds	88	10	48-2½	10	52-2½	Tim	Ro	...	15
Hol DD		100	DR	DR	12-	Su	54	Roc 14	Fu	5	6.52	M	2	1500	Tim 56410-PA	5.28	A	598	17¼	Ds	88	14	52-3	16	58-3	Tim	Ro	...	16
Hol Do	2	92	DR	LD	12-120	Su	74	LR 15	Fu	5	8.08	M	2	1500	Tim L110	4.11	A	696	¶	Ds	16	16	54-3	17	64-3	Tim	Ro	80	17
Cum		90		LN	12-110		68	LR 17	Fu	5	6.37	M	2	1600	Tim Q-110-DPA	4.62	A		15	Ds			54-4		70-4	Tim	Ro	80	18
Hol Up		30	Fo	Fo	6-130	Op	68	Lg 11	W	3	3.71	M		...	Tim F3COE	4.86	H	215	10¼	Ds	40	10	36-1¾	12	45-2¼	Tim	Gem	64.6	19
Hol Up		30	Fo	Fo	6-130	Op	68	Lg 11	W	3	3.71	M		...	Tim F3COE	4.86	H	215	10¼	Ds	40	10	36-1¾	12	45-2¼	Tim	Gem	64.6	20
Zen Up	1¾	60	DR	DR	12-160	Ce	55	LR 13	Cla	3	3.90	M	4	1400	Tim	5.57	A	594	16½	Ds	88	12	54-3	12	60-3	Tim	Ro	59	21
Zen Up	1¾	73	DR	DR	12-160	Ce	65	LR 13	Cla	4	5.00	M	3	1400	Tim	7.85	A	798	14½	Ds	88	11	50-3	13	63½-3	Tim	Ro	66½	22
Car Do	...	115	DR	DR	12-155	Ce	69	Che 11	Spi	4	4.36	M	2	1600	Tim L110	4.11	A	...	16	Ds	...	11	56-4	14	60-4	Tim	Ro	74.6	23
Str Do	...	80	DR	DR	12-155	Ce	66	Spi 13	Spi	4	4.57	M	2	1500	Tim H110	5.83	A	...	16	Ds	...	12	52-3	15	56-3	Tim	Ro	76	24
Car Do	...	80	DR	DR	12-155	Ce	64	Che 11	Che	4	7.06	M	2	1400	Ti 53587TWX1	5.83	A	...	16	Ds	...	12	52-2½	15	56-2½	Tim	Ro	76	25
Str Do	...	80	DR	DR	12-155	Ce	66	Spi 13	Spi	4	4.57	M	2	1500	Tim H110	5.83	A	...	16	Ds	...	12	52-3	15	56-3	Tim	Ro	82.7	26
Str Do	...	80	DR	DR	12-155	Ce	66	Spi 13	Spi	4	4.57	M	2	1500	Tim H110	5.83	A	...	16	Ds	...	12	52-3	15	56-3	Tim	Ro	82.7	27
Str Do	...	80	DR	DR	12-155	Ce	66	Spi 13	Spi	4	4.57	M	2	1500	Tim H110	5.83	A	...	16	Ds	...	12	52-3	15	56-3	Tim	Ro	82.7	28
Car Do		80	DR	DR	12-155	Ce	66	Che 11	Che	4	7.06	M	2	1400	Ti 53587TWX1	5.83	A	...	16	Ds	...	12	52-2½	15	56-2½	Tim	Ro	...	29
Str Do		80	DR	DR	12-155	Ce	66	Spi 13	Spi	4	4.57	M	2	1500	Tim H110	5.83	A	...	16	Ds	...	12	52-3	15	56-3	Tim	Ro	88	30
Str Do		80	DR	DR	12-155	Ce	66	Spi 13	Spi	4	4.57	M	2	1500	Tim H110	5.83	A	...	16	Ds	...	12	52-3	15	56-3	Tim	Ro	88	31
Bos	...	80	...	DR	12-155	Ce	59	Spi 13	Spi	4	4.57	M	2	1500	Tim H110	5.71	A	...	16	Ds	...	12	52-3	15	56-3	Tim	Ro	88	32
Own	...	100	...	DR	12-180♦	Ce	57	Lg 15½	Cla	4	4.88	M	2	1600	Tim 58352WX4	4.11	A	848	14½	Ds	136	11	53-4	12	67-4	Tim	Ro	96	33
Own	...	100	...	DR	12-180♦	Ce	67	Lg 17	Spi	4	3.86	M	2	1700	Tim 59039WX2	3.55	A	715	14½	Ds	125½	11	58-4	13	72-4	Tim	Ro	84	34
Zen Do	1½	60	DR	DR	12-155	Ce	52	...	GH	4	3.82	H	2	1400	Cla R-1203	6.33	A	496	14½	Ds	62.8	11	52-3	11	59-3	Cla	Sag	60	35
Zen Do	1½	60	DR	DR	12-155	Ce	52	...	GH	4	3.82	H	2	1400	Cla R-1203	6.33	A	620	14½	Ds	62.8	11	52-3	11	59-3	Cla	Sag	66	36
Own	...	85	...	DR	12-126♦	Ce	50	Lg 17	Spi	4	4.36	M	2	1600	Tim 57452WX4	3.87	A	646	14½	Ds	69	9	60½-4	12	62-4	Tim	Sag	66½	37
Zen Do	1¾	85	DR	DR	12-126♦	Ce	56	Lg 15½	Spi	3	3.50	M	2	1600	Tim 57452WX4	5.43	A	646	14½	Ds	69	9	60½-4	12	62-4	Tim	Sag	66½	38
Own	...	85	...	DR	12-126♦	Ce	50	Lg 17	Spi	4	4.36	M	2	1600	Tim 57452WX4	3.87	A	646	14½	Ds	69	9	60½-4	12	62-4	Tim	Sag	73	39
Zen Do	1¾	85	DR	DR	12-126♦	Ce	56	Lg 15½	Spi	3	3.50	M	2	1600	Tim 57452WX4	5.43	A	646	14½	Ds	69	9	60½-4	12	62-4	Tim	Sag	73	40
Own	...	85	...	DR	12-126♦	Ce	61	Lg 17	Spi	4	4.36	M	2	1700	Tim 58460WX3	3.87	A	784	14½	Ds	104	10	60½-4	13	62-4	Tim	Sag	80	41
Own	...	85	...	DR	12-126♦	Ce	61	Lg 17	Spi	4	4.36	M	2	1700	Tim 58464WX1	3.87	A	784	14½	Ds	104	10	60½-4	14	64½-4	Tim	Sag	80	42
Own	...	85	...	DR	12-126♦	Ce	47	Own 15	Ow**	If	...	H	2	1600	Tim 57460WX1	4.71	A	646	14½	Ds	69	9	60½	12	62-4	Tim	Sag	66½	43
Zen Do	1¾	85	DR	DR	12-126♦	Ce	56	Own 15	Ow**	If	...	H	2	1600	Tim 57460WX1	4.71	A	646	14½	Ds	69	9	60½	12	62-4	Tim	Sag	66½	44
Own	...	85	...	DR	12-126♦	Ce	47	Own 15	Ow**	If	...	H	2	1600	Tim 57460WX1	4.71	A	646	14½	Ds	69	9	60½	12	62-4	Tim	Sag	73	45
Zen Do	1¾	85	DR	DR	12-126♦	Ce	55	Own 15	Ow**	If	...	H	2	1600	Tim 57460WX1	4.71	A	646	14½	Ds	69	9	60½	12	62-4	Tim	Sag	73	46
Own	...	85	...	DR	12-126♦	Ce	48	Own 15	Ow**	If	...	H	2	1700	Tim 58470WX1	4.71	A	784	14½	Ds	104	10	60½	13	62-4	Tim	Sag	80	47
Own	...	85	...	DR	12-126♦	Ce	48	Own 15	Ow**	If	...	H	2	1700	Tim 58473WX1	4.71	A	784	14½	Ds	104	10	60½	14	64½-4	Tim	Sag	80	48
Hol Do	...	31	AL	AL	6-206	...	58	Int 10⅞	Int	5	6.82	M	3	...	Int R1560	5.62	H	421	...	Ds	75	...	46-2¼		54-3	Int	Ro	59	49
Hol Do	...	31	AL	AL	6-206		57	Int 10⅞		5	6.82	M	3	...	Int R1560	5.62	H	421	†	Ds	75	9	46-2¼	11	54-3	...	Ro	59	50
Zen Up	1¾	75	DR	DR	12-158	Ce	24*	Spi 14	Spi**	If	...	H	2	1600	Own RA106	Var	A	609	15	Ds	61	11	62-3½	15	62-4	Own	Gem	56	51
Zen Up	1¾	75	DR	DR	12-158	Ce	24*	Spi 14	Spi**	If	...	H	2	1600	Own RA106	Var	A	609	15	Ds	61	11	62-3½	15	62-4	Own	Gem	64	52
Zen DD	1⅝	100	DR	DR	12-158	Ce	20*	Spi 16	Spi**	If		H	2	1700	Own RA103	Var	A	748	16½	Ds	122	11	70-4	15	62-4	Own	Gem	75	53
Bos	B	100	...	DR	12-200	H	20*	Spi 16	Spi**	If		H	2	1700	Own RA103	Var	A	748	16½	Ds	122	11	70-4	15	62-4	Own	Gem	75	54
Zen DD	1⅝	100	DR	DR	12-158	Ce	20*	Spi 16	Spi**	If		H	2	1700	Own RA103	Var	A	748	16½	Ds	122	11	70-4	15	62-4	Own	Gem	80	55
Bos	B	100	...	DR	12-200	H	20*	Spi 16	Spi**	If		H	2	1700	Own RA103	Var	A	748	16½	Ds	122	11	70-4	15	62-4	Own	Gem	80	56
Bos	B	75	...	DR	12-200	H	24*	Spi 14	Spi**	If		H	2	1600	Own RA106	Var	A	609	15	Ds	61	11	62-3½	15	62-4	Own	Gem	56	57
Bos	B	75	...	DR	12-200	H	24*	Spi 14	Spi**	If		H	2	1600	Own RA106	Var	A	609	15	Ds	61	11	62-3½	15	62-4	Own	Gem	64	58
Car DD	1¼	80	DR	DR	12-160	Su	57	BB 14	Spi	3	3.80	M	2	1600	Tim L110	6.16	A	796	16½	Ds	102	9	62-4	9	64-4	Tim	Ro	64	59
Car DD	1¼	80	DR	DR	12-160	...	57	Spi 14	Spi**	2		H	2	1600	Tim L110	6.16	A	796	16½	Ds	102	9	62-4	9	64-4	Tim	Ro	64	60
Zen Do	1¾	72	Op	Op	12-	Ce	50	BL 14	Spi♦♦	3	3.80	M	2	1600	Ti H110DPAX1	5.28	A	576	15	Ds	96	13	62-3	13	70-3½	Tim	Ro	64	61
Zen Do	1¾	72	Op	Op	12-	Ce	50	BL 14	Spi♦♦	3	3.80	M	2	1600	Ti L110DPAX4	6.16	A	631	15	Ds	96	13	62-3	14	70-3½	Tim	Ro	68	62
Zen Do	1¾	110	Op	Op	12-	Ce	50		Spi**	If		H	2	1600	Tim Q-110-DPA	6.17	A	631	15	Ds	101	12	62-3½	14	70-4	Tim	Ro	74	63
Zen Do	1¾	91.5	DR	DR	12-160	Su	50	BB 14	Cla	3	4.06	M	2	1600	Cla R1253	5.57	A	500	14½	Ds	81	9	56-3	12	88-3	Cla	Ro	60	64
Hol Do	...	80	DR	LD	12-170	Va	48	None	Spi**	If	5.40	H	2	1608	Tim J151	5.83	A	751	14½	Ds	65½	To	rsilastic	To	rsilastic	Tim	Gem	70⅝	65
Hol Do	...	80	DR	LD	12-170	Va	48	None	Spi**	If	5.40	H	2	1608	Tim J151	5.83	A	751	14½	Ds	65½	To	rsilastic	To	rsilastic	Tim	Gem	70⅝	66
Hol Do	...	80	DR	LD	12-170	Va	48	None	Spi**	If	5.40	H	2	1608	Tim 58268	6.16	A	774	16½	Ds	65½	To	rsilastic	To	rsilastic	Tim	Gem	77⅝	67
Hol Do	...	80	DR	LD	12-170	Va	48	None	Spi**	If	5.40	H	2	1608	Tim J153A1	5.83	A	751	14½	Ds	65½	To	rsilastic	To	rsilastic	Tim	Gem	70⅝	68
Hol Do	...	125	DR	LD	12-170	Va	48	None	Spi**	If	5.40	H	2	1608	Tim 58268C3	6.16	A	774	14½	Ds	65½	To	rsilastic	To	rsilastic	Tim	Gem	79⅝	69
Hol Do	...	125	DR	LD	12-170	Va	58	None	Spi**	If	5.40	H	4	1608	Tim J152	4.86	A	880½	16½	Ds	65½	To	rsilastic	To	rsilastic	Tim	Gem	31.2	70
Hol Do	...	125	DR	DR	12-170	Va	41	...	Spi**		5.40	H	2	1608	Tim 58268	6.83	A	774	16½	Ds	...	To	rsilastic	To	rsilastic	Tim	Gem	...	71
Zen He	1½	105	DR	LD	12-158	HM	57	None	Own	2	1.98	H	2	1700	Own 88C	5.57	A	818	15	Ds	123	11	66-4	12	72-4	Own	Ro	38½	72
Zen He	1½	130	DR	LD	12-158	HM	58	None	Own	2	1.98	H	2	1700	Own 88C	5.57	A	818	15	Ds	123	11	66-4	12	72-4	Own	Ro	39½	73
Zen He	1⅝	130	DR	LD	12-158	HM	58	None	Own	2	1.98	H	2	1700	Own 88C	5.57	A	818	15	Ds	123	11	66-4	12	72-4	Own	Ro	41.6	74

Fr—Front.
Fu—Fuller Mfg. Co.
g—Timing Gears or Chain.
G—Gasoline.
Gem—Gemmer Mfg. Co.
GH—G.M. Hydra-Matic.
G.M.C.—General Motors Truck & Coach Mfg. Co.
h—Air Compressor.
H—Hydraulic.
Her—Hercules Motor Corp.
Hol—Holley Carburetor Co.
HS—Hall-Scott Motor Div.
HM—Hydraulic-Mechanical.
I—In-Head (Valves).
If—Infinite.
I-C—International-Continental.
IC—Intercity.
Int—International Harvester Co.
L—At Side (Valves).
LD—Leece-Neville (Altenator) Delco Remy (Starter).
Lg—Long Mfg. Div.
LN—Leece-Neville Co.
LR—Lipe Rollway Corp.
M—Mechanical.
Ng—Not governed.
Op—Optional.
R—Rear (Engine Location).
Ro—Ross Gear & Tool Co.
Roc—Rockford Drilling Machine Div.
Sag—Saginaw Steering Gear Div.
Spi—Spicer Mfg. Div.
Str—Stromberg Carburetor Div.
Su—Suction.
Sub—Suburban.
TR—Transverse at Rear.
Ti or Tim—Timken Detroit Axle Co.
UF—Under floor.
Up—Updraft.
Va—Vacuum.
Var—Various.
W—Warner Gear.
Wau—Waukesha Motor Co.
Zen—Zenith Carburetor Div.

For Directory of the Manufacturers listed above, see page 63.

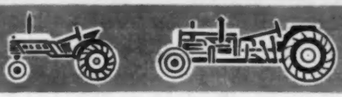
AMERICAN TRACTORS . . .

Line Number	Tractor Make and Model	General: Wheelbase (In.)	General: Minimum Turning Radius Outside (Ft.)	General: Ground Clearance (In.)	General: Shipping Weight with Rubber Tires (Lb.)	General: Tread (In.) Minimum	General: Tread (In.) Maximum	Drawbar: Lateral Adjustment (In.)	Drawbar: Height Above Ground (In.)	Overall Dimensions: Length (In.)	Overall Dimensions: Width (In.)	Overall Dimensions: Height—To Highest Point (In.)	Wheels: Standard Equipment	Wheels: Steel Diam. and Face Front (In.)	Wheels: Steel Diam. and Face Rear (In.)	Wheels: Tire Size Front (In.)	Wheels: Tire Size Rear (In.)	HP. Rating: Belt	HP. Rating: Drawbar	Nebraska Test Number	Power Take-off	Number of Forward Speeds	Number of Reverse Speeds	Travel Speeds at Normal Governed Engine R.P.M. (M.P.H.) with Standard Wheels: First	Second	Third
1	Allis-Chalmers ... IB	57 1/16	7	12 7/8	2365	40 1/2	52 1/2	....	11 1/2	97 1/2	52 5/8	54 1/2	RT	......	......	5.00/15	9/24	16.31	13.54	....	Op	3	1	3.30	5.30	10.0
2	... B	73 11/16	7 3/4	21 5/8‡	2060	40 1/2	52 1/2	22 1/4	12 1/2	110 1/4	52 11/16	62	RT	22x4	36x6	4.00/15	9/24	16.31*	13.54*	302	Op	3	1	2.60	4.01	7.90
3	... C	77	7	23 1/4†	2250	52	80	22 1/4	12 1/2	114	68 1/2	62 3/4	RT	22x4	36x6	4.00/15	9/24	23.81*	18.74*	364	Op	3	1	2.30	3.60	7.10
4	... WC	87 1/4	8	29 1/4†	3310	54 1/2	76 1/2	10 1/2	16	126 1/2	76 3/8	67 1/4	RT	24x4	40x6	5.50/16	11/28	31.43*	23.58*	304	Op	4	1	2.64	3.84	5.10
5	... WF	70	12	13	3490	46 5/8	56 1/2	10 1/2	14 1/4	117 1/2	67 1/4	60 1/4	RT	24x4	40x6	5.50/16	11/28	31.43*	23.58*	....	Op	4	1	2.60	3.80	5.10
6	... G	85 1/2	6 1/2	17 3/4	1285	36	64	7 3/4	13	116	38*	55 11/16	RT	......	......	4.00/12	6/30	10.91*	9.50*	390	....	4	1	1.60	2.26	3.57
7	... WD	88	8 1/2	28 1/2	3875	56	90	8 1/4	16 1/4	128	74 1/16*	61 1/2	RT	......	......	5.50/16	11.00/28	27.60*	25.59*	309	Op	4	1	2.64	3.85	5.11
8	Avery ... A	80	Piv	23	2275	48	76	20	15 1/2	118	85	65	RT	......	......	6.00/16	10/24	......	......	....	Op	3	1	2.35	3.72	6.10
9	... V	74	9	23	1667	40	40	24	13 5/8	105	61	61 1/4	RT	......	......	4.00/15	8/24	......	......	....	Op	3	1	2.62	3.46	7.04
10	Case ... VA	75 1/4	9 1/2	15 5/8	......	44	72 1/2	16	12	102	65	51 1/2△	Op	28x4	38x8	5.00/15	9/24	......	......	NT	Op	4	1	2.25	3.00	4.00
11	... VAC	83	8 1/2	19 5/8	......	44	88	16	15	119	88	56 1/2*	Op	21x3 1/2	42x3	5.00/15	9/32	......	......	NT	Op	4	1	2.50	3.75	4.25
12	... VAI	75 1/4	9 1/2	15 5/8	......	44	72	N	12 7/8	109 5/8	65	51 1/2*	RT	......	......	6.00/16	9/24	......	......	NT	Op	4	1	2.64	4.55	5.82
13	... S	86	10	......	......	46	......	18	13	108 1/2	58 1/4	51△	Op	25x4	42x8	5.00/15	11/26	......	......	NT	Op	4	1	2.50	3.50	5.00
14	... SC	82 1/2	Piv	......	......	44	80	17	16 3/4	133	74 1/2	56△	Op	24 3/4x4	48x2 1/2	5.00/15	10/38	......	......	367	Op	4	1	2.50	3.50	4.75
15	... SI	65 3/4	12	......	......	48 1/2	......	N	15 7/8	110 3/4	61.9	51 1/4*	RT	......	......	6.00/16	12.00/24	......	......	NT	Op	4	1	2.52	3.57	4.93
16	... D	86 5/8	10	......	......	50	......	29	13	118	61 1/2	50 5/8	Op	28x5	42x11 1/4	6.00/16	12/26	......	......	349	Op	4	1	2.25	3.75	5.25
17	... DC	89	Piv	......	......	48	84	21	16.8	140	81	56△	Op	25x4	48x2 1/2	5.50/16	11/38	......	......	340	Op	4	1	2.00	3.75	5.00
18	... DI	66 1/16	12	......	......	52	......	N	17	111	67.2	51 1/4△	RT	......	......	6.00/16	13.00/24	......	......	NT	Op	4	1	1.90	3.62	5.00
19	... LA	82	13	......	......	59 1/2	......	33 1/4	15	140	72 1/2	61 7/16△	Op	30x6	48x12	7.50/18	14/30	......	......	NT	Op	4	1	2.50	3.33	4.33
20	... LAI	82	16 1/4	......	......	59 1/2	......	N	16	131	73 7/8	50△	RT	......	......	7.50/18	14.00/28	......	......	NT	Op	4	1	1.73	3.12	4.13
21	Corbitt ... G50	86	8 1/8	20	3450	56	84	23	18	128	74*	69 1/2	RT	......	......	5.50/16	10/38	36.22	32.24	422	St	4	1	2.50	3.60	5.00
22	... K50	86	8 1/8	20	3450	56	84	23	18	128	74*	69 1/2	RT	......	......	5.50/16	10/38	26.40	23.00	....	St	4	1	2.50	3.60	5.00
23	... D50	86	8 1/8	20	3550	56	84	23	18	128	74*	69 1/2	RT	......	......	5.50/16	10/38	35.00	31.40	....	St	4	1	2.50	3.60	5.00
24	Earthmaster ... C	66	7	20	2080	36	64	28	15 1/4	98	51	61	RT	......	......	4.00/15	9/24	12.40	10.90	....	Op	3	1	2.93	4.19	6.70
25	... CH	66	7	24 1/2	2080	36	64	28	20	100	51	64	RT	......	......	4.00/15	7/30	12.40	10.90	....	Op	3	1	3.10	4.45	7.10
26	... CN	66	7	20	2065	38	58	28	15 1/4	98	46	61	RT	......	......	4.00/15	9/24	12.40	10.90	....	Op	3	1	2.93	4.19	6.70
27	... CNH	66	7	24 1/2	2065	38	58	28	20	100	46	64	RT	......	......	4.00/15	7/30	12.40	10.90	....	Op	3	1	3.10	4.45	7.10
28	... D	66	9	20	2153	56	64	28	15 1/4	98	71	61	RT	......	......	4.00/15	9/24	12.40	10.90	....	Op	3	1	2.93	4.19	6.70
29	... DH	66	9	24 1/2	2153	56	64	28	20	100	71	64	RT	......	......	4.00/15	7/30	12.40	10.90	....	Op	3	1	3.10	4.45	7.10
30	Ferguson ... TO-20	70	8	20	2500	48	80F	17 5/16	(n)	115	63 1/2	51 3/4	RT	......	......	4x19.00	10/28	26.50	21.77	392	St	4	1	3.32	4.57	6.29
31	Ford ... 8N	70	8	13	2410	48	76	20	8 1/2	115	64 11/16	54 1/2	RT	......	......	4/19	10/28	26.42	22.76	393	St	4	1	3.69	4.75	6.54
32	Friday Tractor ... 048	79	12	12	3580	67	57	26	15	127	76	56	RT	......	......	6.00/16	13/24	46.00	34.63	....	Op	10	2	1.90	2.80	3.40
33	Gibson ... SD	46	6	14	910	33	53 3/4	N	13	74	53	45	RT	......	......	4.00/12	7/24	......	......	....	....	3	1	2.00	4.00	7.00
34	... E	66	10	21 3/4	1844	47	84	6	14	90	71	60	RT	......	......	4/12	8/24	9.00	8.50	....	Op	3	1	2.00	4.00	7.00
35	... H	86	11 1/2	25	3400	47	85	13	15 1/2	123 1/2	79	67	RT	......	......	5.00/15	10/38	43.05	38.12	406	St	4	1	2.16	3.37	4.75
36	... I	94	12 1/2	25	4000	49	90	13	15 1/2	136 1/2	79 1/2	67	RT	......	......	5.50/16	10/38	25.99	24.20	407	St	4	1	2.16	3.37	4.75
37	I.H. ... Farmall-Cub	69 5/8	8 1/4	19 5/8	1140	40R	56 3/4F	22 7/8	12 3/4	96 1/2	47 1/4*	62 1/2	RT	......	......	4.00/12	7/24	9.76	8.89	386	Op	3	1	2.00	3.00	6.12
38	... Farmall-Super-A	71	8 1/2	21 5/8	2255	40R	68R	18 3/4	14 7/8	106 1/8	55 7/8*	64 1/4	RT	......	......	4.00/15	9/24	19.06	17.35	329	Op	4	1	2.37	3.62	4.87
39	... Farmall-Super-AV	71 5/8	8 3/4	27	2730	44F	68R	18 3/4	14 1/8	115	60 5/8*	70 1/2	RT	......	......	4.00/19	9/36	19.00	17.00	....	Op	4	1	3.00	4.87	6.37
40	... Farmall-C	81 5/8	7'11"	22 1/2	2825	6 3/4F	80R	16 1/4	18	120 3/8	80 1/2*	70 3/8	RT	......	......	4.00/15	9/36	22.18	19.63	395	Op	4	1	2.37	3.75	5.00
41	... Farmall-H	88 3/4	8 1/2	24 5/8	3460	8 1/8F	80R	26	16 1/8	131 5/8	75 1/2*	75 3/8	RT	22 1/2x3 1/2	51x8	5.50/16	10/38	27.90	25.50	333	Op	5	1	2.50	3.37	4.12
42	... Farmall-HV	91 1/2	12 1/2	30 1/4	4555	60F	66F	30	17 3/4	146 1/2	85 7/8	67 1/2	RT	......	......	6.00/20	12/36	27.50	25.00	....	Op	5	1	2.50	3.37	4.00
43	... Farmall-M	88 3/4	8'5"	25 1/2	4610	8 3/8F	88R	26	17 3/8	133 1/8	84 1/2*	78 1/8	RT	22 1/2x4	51x10	6.00/16	11/38	39.23	34.44	328	Op	5	1	2.62	3.50	4.25
44	... Farmall-MD	90 1/8	8 1/2	25 1/2	4965	8 3/8F	88R	26	17 3/8	134 5/8	84 1/2*	78 1/4	RT	22 1/2x4	51x10	6.00/16	11/38	36.56	33.04	368	Op	5	1	2.62	3.50	4.25
45	... Farmall-MV	91 1/2	12 1/2	29 7/8	5645	60F	66F	30	18 5/8	146 1/2	85 7/8	90	RT	......	......	6.00/20	13/36	38.50	33.50	....	Op	5	1	2.50	3.37	4.12
46	... Farmall-MDV	93 1/8	12 1/2	29 7/8	6005	60F	66F	30	18 5/8	148	85 7/8	90	RT	......	......	6.00/20	13/36	36.00	31.50	....	Op	5	1	2.50	3.37	4.12
47	... McC.-W-4	86 3/4	11	14 5/8	3535	45 7/8F	52R	18 1/4	14 7/8	114	65 1/4	62 7/8	RT	22 1/2x3 1/2	40x8	5.50/16	12/26	27.80	25.67	353	Op	5	1	2.37	3.12	4.00
48	... McC.-W-6	76	12 3/4	15 1/4	4610	46 3/4F	55R	18 1/4	17 7/8	125	69 3/4	70 1/8	RT	22 1/2x4	42x10	6.00/16	13/30	38.74	33.81	355	Op	5	1	2.37	3.37	4.37
49	... McC.-WD-6	76	12 3/4	15 1/4	5030	46 3/4F	55R	18 1/4	17 7/8	125	69 3/4	70	RT	22 1/2x4	42x10	6.00/16	13/30	36.38	31.38	356	Op	5	1	2.37	3.37	4.37
50	... McC.-W-9	83 5/8	16	15	6085	52F	60R	18 5/8	17 7/8	134 1/4	75 3/4	72 3/4	RT	30x6	48x12	7.50/18	14/34	52.36	47.06	369	Op	5	1	2.37	3.25	4.62
51	... McC.-WD-9	83 5/8	16	15	6415	52R	60R	18 5/8	17 7/8	134 1/4	75 3/4	72 3/4	RT	30x6	48x12	7.50/18	14/34	49.17	44.78	370	Op	5	1	2.37	3.25	4.62
52	... McC.-WR-9	83 3/4	16	16 7/8	6490	51 1/8F	57 3/8R	18 3/4	15	139 3/4	69 3/4	72 3/4	SW	34x6	54x12	7.50/18	15/34	52.00	46.00‡	....	Op	4*	1	2.62	3.50	4.87
53	... McC.-WDR-9	83 3/4	16	16 7/8	6820	51 1/8F	57 3/8R	28 1/4	15	139 3/4	69 3/4	72 3/4	SW	34x6	54x12	7.50/18	15/34	49.00	43.50‡	....	Op	4*	1	2.62	3.50	4.87
54	... McC.-O-4	66 3/4	11	12 7/8	3795	45 7/8F	41 3/4R	28 1/4	14 1/8	120 7/8	60 1/4	57 1/8	RT	......	......	5.50/16	12/26	27.50	25.00	....	Op	5	1	1.50	3.12	4.00
55	... McC.-OS-4	66 3/4	11	12 7/8	3610	45 7/8F	41 3/4R	27 1/4	14 1/8	120 7/8	55 1/2	57 1/8	RT	......	......	5.50/16	12/26	27.50	25.00	....	Op	5	1	1.50	3.12	4.00
56	... McC.-O-6	76 1/4	12 3/4	11 7/8	4895	46 3/4F	45R	27 1/4	14 3/8	133 1/4	65	61 1/2	RT	......	......	6.00/16	13/26	38.50	33.50	....	Op	5	1	1.50	3.12	4.12
57	... McC.-OS-6	76 1/4	12 3/4	11 7/8	4600	46 3/4F	45R	27 1/4	14 3/8	133 1/4	59 3/4	61 1/2	RT	......	......	6.00/16	13/26	38.50	33.50	....	Op	5	1	1.50	3.12	4.12
58	... McC.-ODS-6	76 1/4	12 3/4	11 7/8	5020	46 3/4F	45R	27 1/4	14 3/8	133 1/4	59 3/4	61 1/2	RT	......	......	6.00/16	13/26	36.00	31.00	....	Op	5	1	1.50	3.12	4.12
59	International Super-A	71 1/4	9	18 5/8	2060	40R	68R	....	10	106 3/4	55 7/8	64 1/8	RT	......	......	4.00/15	9/24	19.06	17.35	....	Op	4	1	2.30	3.60	4.70
60	Inter- ... I-4 Standard	66 3/4	10	12 1/4	3780	46 1/8	......	....	10 7/8	113 3/4	58 7/8	62 3/4	RT	......	......	5.50/16	12.00/24	27.80	25.00	....	Op	5	1	2.20	3.60	5.20
61	national ... I-6 Standard	76 1/4	11 3/4	11 1/2	4790	50	......	....	10 1/4	125 1/4	64	68 3/4	RT	......	......	6.00/16	13.00/24	38.50	34.00	....	Op	5	1	2.20	3.60	5.30
62	... ID6 Standard	76 1/4	11 3/4	11 1/2	5120	50	......	....	10 1/4	125 1/4	64	68 3/4	RT	......	......	6.00/16	13.00/24	36.00	32.00	....	Op	5	1	2.20	3.60	5.30
63	... I-9 Standard	83 5/8	14	13 1/4	6310	50 1/8	......	....	12 1/8	132 1/4	67 3/4	69	RT	......	......	7.50/18	13.00/32	52.00	46.50	....	Op	5	1	2.30	3.10	5.30
64	... ID9 Standard	83 5/8	14	13 1/4	6585	50 1/8	......	....	12 1/8	132 1/4	67 3/4	69	RT	......	......	7.50/18	13.00/32	49.00	44.00	....	Op	5	1	2.30	3.10	5.30
65	John Deere ... B	90	8'7"	27	4052	56	88	26 3/4	17 1/16	132 1/4	86 11/16	79 3/4	RT	......	......	5.50/16	10.00/38	28.69	25.50	380	St	6	...	1.50	2.50	3.50
66	... A	90	8'7"	26	4909	56	88	25 1/2	17 5/16	134	86 3/8	81 1/8	RT	......	......	5.50/16	11.00/38	38.45	35.30	384	St	6	1	1.40	2.50	3.50
67	... AR	75 3/4	13 2/3	21 1/2	5140	54 1/16	58 7/16	27	12 1/2	125 1/2	71 1/2	67	RT	28x6	42 3/4x10	6.00/16	13/26	39.10	34.86	429	Op	6	1	1.25	2.50	3.25
68	... AO	75 3/4	13 2/3	21 1/2	5140	54 1/16	58 7/16	27	12 1/2	125 1/2	75 5/8	57 1/2	RT	28x6	42 3/4x10	6.00/16	13/26	39.10	34.86	429	Op	6	1	1.25	2.50	3.25
69	... G	91	8 1/2	27	5620	60	84	24 3/4	16 1/2	137 1/16	84 3/4	86 7/8	RT	......	......	6.00/16	12/38	39.80	36.01	383	....	6	1	2.50	3.60	4.50
70	... D	70	14	24	5703	55	55	39 1/2	18	130 1/2	70	86 3/4	RT	......	......	7.50/18	14/30	44.83	40.61	350	....	3	1	3.00	3.00	5.25
71	... M	70	8 1/2	21	2750	38	52	14	15	110	51	66	RT	......	......	5.00/15	9.00/24	21.42	19.19	387	St	4	1	1.62	3.12	4.25
72	... R	85 1/8	14 1/4	25 1/4	7500	62 1/2	62 1/2	40	15 3/4	147	79 1/2	78 1/8	RT	30x6	54x12	7.50/18	14/34	50.96	45.69	406	Op	5	1	2.13	3.33	4.25
73	Lincoln ... A	40	4	10	800	34	34	8 1/2	10	72	41	42	RT	......	......	4.00/12	7.50/16	4.12	3.21	....	St	3	1	1.31	2.48	4.25
74	Massey-Harris ... Pon.	66		21	1520	41	72		15		49	60	RT	......	......	4.00/15	9/24	10.34	8.31	401	Op	3	1	2.74	3.59	7.00
75	... Std.-22	74 3/4	10	11 1/2	2710	47	47	18 3/4	10 1/8	111 1/2	56 1/4	73	RT	......	......	5.00/15	10/34	26.85	17.93	403	Op	4	1	2.79	3.98	5.24
76	... RC-22	82 3/4	7 1/4	12 5/8	2560	48	88	18 5/8	11 1/4	119 1/2	81 1/2	76	RT	......	......	4.00/15	10/34	26.85	17.93	403	Op	4	1	2.79	3.98	5.24
77	... Std.-30	79 1/16	10 1/2	9 1/2	3960	52 1/8	52 1/8	11 1/2	7 5/8	125 5/8	64 1/16	71 3/8	RT	28x4 1/2	44x10	5.00/15	11/28	29.99	20.42	409	Op	5	1	2.19	3.06	3.82
78	... RC-30	83	8 1/2	13 5/8	3770	52	88	11 1/2	11 3/4	128	79	74 1/4	RT	......	50x1 11/16	5.00/15	10/38	29.99	20.42	409	Op	5	1	2.58	3.61	4.51
79	... Std.-44	79 1/8	11	12	4500	54 1/8	54 1/8	11 1/2	10 5/8	127 1/4	68 3/16	77 1/2	RT	28x4 1/2	48x12	6.00/16	13/30	39.98	31.02	389	Op	5	1	2.21	3.33	4.43
80	... RC-44	89 3/4	9	16 1/4	4165	52	88	11 1/2	14 1/16	135 1/4	79	80	RT	22x4	50x1 11/16	5.50/16	12/38	39.98	31.02	389	Op	5	1	2.48	3.75	4.97
81	... 44D		11	12	4500	54 1/8	54 1/8	11 1/2	10 5/8	127 1/4	68 3/16	77 1/2	RT	28x4 1/2	48x12	6.00/16	13/30	36.58	29.61	426	Op	5	1	2.21	3.33	4.43
82	... 44-6	89 3/4	9	16 1/4	4120	52	88	11 1/2	14 1/16	135 1/4	79	80	RT	......	48x12	6.00/16	13/30	36.50	25.90	....	Op	5	1	2.46	3.44	4.29
83	... 55	89 1/16	12	12 1/2	7150	57	57	18 5/8	16 3/4	141 1/2	72 1/2	78	RT	30x5 7/8	54x12	7.50/18	14/34	52.18	40.65	394	Op	4	1	2.96	4.22	5.21
84	... 55D		12	12 1/2	7150	57	57	18 5/8	16 3/4	141 1/2	72 1/2	78	RT	30x5 7/8	54x12	7.50/18	14/34	46.00	36.30	....	Op	4	1	2.96	4.22	5.21

For abbreviations, see pages 140 and 141

For Directory of the Manufacturers listed above, see page 63.

. . . WHEEL TYPES



Travel Speeds at Normal Governed Engine R.P.M. with Standard Wheels				ENGINE							FUEL										BELT PULLEY				CAPACITIES						
Fourth	Fifth	Sixth	Reverse	Make and Model	Number of Cylinders—Bore and Stroke (In.)	Piston Disp. (Cu. In.)	R.P.M. at Governed Speed	Valve Arrangement	Number of Main Bearings	Diameter of Main Bearings	Standard	Optional	Ignition—Make	Carburetor or Injector Pump—Make	Air Cleaner—Make	Governor—Make	Oiling System—Type	Cooling System—Type	Clutch—Make and Type	Final Drive—Type	Diameter (In.)	Face (In.)	Normal R.P.M.	Steering Type	Cooling System (Gal.)	Fuel Tank (Gal.)	Crankcase (Qts.)	Transmission (Qts.)	Final Drive Case (Qts.)	Starting Method	Line Number
...	...	...	3.80	Own...1B	4-3⅝x3½	125	1400	I	3	2¼	G	...	FM	Zen	Don	Own	P	Pu	Rec..SP	SG	8	5½	1084	FK	2	13	4	7	4♦	Ele	1
...	...	...	3.00	Own...B	4-3⅝x3½	125	1400	I	3	2¼	G,D	...	FM	Zen	Don	Own	P	Pu	Rec..SP	SG	8	5½	1084	FK	2	13	4	6	†††⅝	Ele	2
...	...	...	2.70	Own...C	4-3⅝x3½	125	1500	I	3	2¼	G,D	...	FM	Zen	Don	Own	P	Pu	Rec..SP	SG	8	5½	1129	SA	2	13	4	6	†††⅝	Ele	3
9.80	...	...	2.20	Own...W	4-4x4	201	1300	I	3	2.47	G,D	...	FM	Zen	Uni	Own	P	Pu	Rec..SP	SG	9	6½	1170	SA	3½	15	6	4	†††½	Ele	4
9.80	...	...	2.20	Own...W	4-4x4	201	1300	I	3	2.47	G,D	...	FM	Zen	Uni	Own	P	Pu	Rec..SP	SG	9	6½	1170	FK	3½	15	6	4	†††⅝	Ele	5
6.91	...	...	1.96	Cont..N62	4-2⅜x3½	62	1800	L	2	2	G	...	DR	Mar	Don	Cont	P	TS	Rec..SP	SB	6	4	1950	FK	1½	5	3½	8	...	Ele	6
9.80	...	...	2.21	Own...WD	4-4x4	201	1400	I	3	2½	G,D	...	FM	Zen	Uni	Own	P	Pu	Rec..SP	SG	9	6½	1200	SA	3½	15	6	17	2	Ele	7
...	...	...	2.86	Herc.IXB-3	4-3¼x4	133	1450	L	3	2	G	...	DR	Tll	Vor	Han	P	TS	Rec..SP	SG	8½	6½	1035	...	2¾	12	5	10	1½	HE	8
...	...	...	3.00	Herc.ZXB	4-2⅝x3	65	1800	L	3	2	G	...	DR	Tll	Vor	Han	P	TS	Rec..SP	SG	6	5½	1990	SA	1½	7	4	5	1½	HE	9
8.00	...	...	3.00	Own...VA	4-3¼x3⅝	124	1425	I	3	2¼	G	D	Own	Mar	Vor	Own	P	Pu	.....SP	SG	10¼	6	900	FK	3¼	10	4	28	♦8	HE	10
9.00	...	...	3.50	Own...VA	4-3¼x4	124	1425	I	3	2¼	G	D	Own	Mar	Vor	Own	P	Pu	.....SP	SG	10¼	6	900	SA	3¼	10	4	28	♦8	HE	11
14.00	...	...	3.64	Own...VA	4-3¼x3⅝	124	1425	I	3	2¼	G	D	Own	Mar	Vor	Own	P	Pu	.....SP	SG	10¼	6	900	FK	3¼	10	4	28	♦8	HE	12
10.00	...	...	2.75	Own...S	4-3½x4	154	1550	I	3	2½	G	D	Own	Zen	Uni	Own	P	Pu	TD..DO	CH	9¼	6¼	1078	FK	4	15½	5	36	...	HE	13
10.00	...	...	2.75	Own...S	4-3½x4	154	1550	I	3	2½	G	D	Own	Zen	Uni	Own	P	Pu	TD..DO	CH	9¼	6¼	1078	SA	4	15½	5	36	...	HE	14
10.03	...	...	2.82	Own...S	4-3½x4	154	1550	I	3	2½	G	D	Own	Zen	Uni	Own	P	Pu	Rec.MD	CH	9¼	6¼	1078	FK	4	14	5	36	...	HE	15
10.50	...	...	3.00	Own...D	4-3⅞x5½	259	1200	I	3	2¼	G	D	Own	Zen	Own	Own	P	Pu	TD..DO	CH	12¼	7¼	818	FK	7¼	18	7	40	...	HE	16
10.00	...	...	2.75	Own...D	4-3⅞x5½	259	1200	I	3	2¼	G	D	Own	Zen	Own	Own	P	Pu	TD..DO	CH	12¼	7¼	818	SA	7¼	18	7	40	...	HE	17
10.20	...	...	2.88	Own...D	4-3⅞x5½	259	1200	I	3	2¼	G	D	Own	Zen	Own	Own	P	Pu	Rec.MD	CH	12¼	7¼	818	FK	8¾	18	7	40	...	HE	18
10.00	...	...	2.75	Own...LA	4-4⅝x6	403	1100	I	3	3	G	D	Own	Zen	Own	Own	P	Pu	TD..DO	CH	13	8¼	779	FK	15¼	31	12	68	...	HE	19
8.60	...	...	2.48	Own...LA	4-4⅝x6	403	1100	I	3	3	G	D	Own	Zen	Own	Own	P	Pu	.....MD	CH	13	8¼	779	FK	15¼	31	12	68	...	HE	20
10.00	...	...	3.20	Le...D-176	4-3⅜x4	176	1800	I	3	(a)	G	...	DR	Zen	Uni	Le	P	Pu	BB...SP	SG	8	6½	1450	Piv	3¾	12	7	23	33	Ele	21
10.00	...	...	3.20	Le...D-201	4-4x4	201	1800	I	3	(a)	K	G	DR	Zen	Uni	Le	P	Pu	BB...SP	SG	8	6½	1450	Piv	3¾	12	7	23	33	Ele	22
10.00	...	...	3.20	He D1X4D	4-3⅝x4	166	1800	I	5	2¾	D		...	Bos	Uni	Herc	P	Pu	BB...SP	SG	8	6½	1450	Piv	4	12	6	23	33	Ele	23
...	...	...	3.48	Cont...N62	4-2⅜x3½	62	1800	L	2	2	G	K	AL	Zen	Vor	Cont	P	TS	Au...SP	SG	7	5	490	SA	1½	7	4	2½	2	Ele	24
...	...	...	3.70	Cont...N62	4-2⅜x3½	62	1800	L	2	2	G	K	AL	Zen	Vor	Cont	P	TS	Au...SP	SG	7	5	490	SA	1½	7	4	2½	2	Ele	25
...	...	...	3.48	Cont...N62	4-2⅜x3½	62	1800	L	2	2	G	K	AL	Zen	Vor	Cont	P	TS	Au...SP	SG	7	5	490	SA	1½	7	4	2½	2	Ele	26
...	...	...	3.70	Cont...N62	4-2⅜x3½	62	1800	L	2	2	G	K	AL	Zen	Vor	Cont	P	TS	Au...SP	SG	7	5	490	SA	1½	7	4	2½	2	Ele	27
...	...	...	3.48	Cont...N62	4-2⅜x3½	62	1800	L	2	2	G	K	AL	Zen	Vor	Cont	P	TS	Au...SP	SG	7	5	490	SA	1½	7	4	2½	2	Ele	28
...	...	...	3.70	Cont...N62	4-2⅜x3½	62	1800	L	2	2	G	K	AL	Zen	Vor	Cont	P	TS	Au...SP	SG	7	5	490	SA	1½	7	4	2½	2	Ele	29
13.13	...	...	3.83	Own.Z-120	4-3 7/16x3¾	120	2000	I	3	2¼	G	...	DR	Mar	DV	Cont	P	Pu	Rec..SP	SB	9	6½	1356	FK	2½	10	7	24	**	Ele	30
13.64	...	...	6.07	Own...8N	4-3 3/16x3¾	120	(m)	L	3	2.25	G	D	Own	Mar	U-O	Novi	P	Pu	Lg..SP	SB	9	6½	1356	DA	3	10	6	20	**	Ele	31
5.10	6.40	9.20	2.80	Chr...Ind5	6-3¼x4⅜	218	1800	L	4	2½	G	...	AL	Car	Uni	Pie	P	Pu	BB...SP	Hel	8¾	6⅝	1025	FK	8	18½	5	6	8	Ele	32
...	...	...	2.50	Wis...AEH	1-3x3¼	23	2000	L	2	...	G	K	Wico	Zen	Uni		NS	A	V-Belt..	SB	...	...	...	SA	...	2¾	1½	1	1	HC	33
...	...	...	2.50	Wis...TF	2-3¼x3¼	54	2000	L	2	(b)	G	K	AL	Zen	Uni	Wis	NS	A	V-Belt..	CH	...	...	...		...	9	3½	1	3	Ele	34
13.74	...	...	2.00	Herc..IXB3	1-3¼x4	133	1800	L	3	1.96	G	K	DR	Mar	Vor	Han	P	Pu	Roc..SP	SG	9 1/16	7½	1487	...	3½	17	5	21	**	Ele	35
13.74	...	...	2.00	HercQXD5	6-3 7/16x4⅛	230	1800	L	7	2.50	G	K	DR	Mar	Vor	Novi	P	Pu	Roc..SP	SG	9 1/16	7½	1487	...	4	20	6	21	**	Ele	36
...	...	...	2.25	Own......	4-2⅝x2⅝	60	1600	L	3	1⅝	G	...	Own	Own	Don	Own	P	TS	RA...SP	SG	9	4½	1322	FK	2⅛	7½	3	1⅝	†††	HE	37
10.00	...	...	2.87	Own......	4-3x4	113	1400	I	3	2⅛	G	K,D	Own	MS-Z	Don	Own	P	TS	RA...SP	SG	8½	6	1157	FK	3¼	11	5	8½	†††	HE	38
13.25	...	...	3.75	Own......	4-3x4	113	1400	I	3	2⅛	G	K,D	Own	MS-Z	Don	Own	P	TS	RA...SP	SG	8½	6	1157	FK	3¼	11	5	6	†††	HE	39
10.25	...	...	3.00	Own......	4-3x4	113	1650	I	3	2⅛	G	K,D	Own	MS-Z	Don	Own	P	TS	RA...SP	SG	8½	6	1363	SA	3¼	11	5	20	...	HE	40
5.12	15.62	...	2.87	Own......	4-3⅜x4¼	152	1650	I	3	2½	G	K,D	Own	Own	Don	Own	P	Pu	RA...SP	SG	9¾	7½	1019	SA	4½	17½	6	24	...	HE	41
5.00	15.37	...	2.87	Own......	4-3⅜x4¼	152	1650	I	3	2½	G	K,D	Own	Own	Don	Own	P	Pu	RA...SP	CH	9¾	7½	1019	FK	4½	17½	6	24	...	HE	42
5.12	16.25	...	3.12	Own......	4-3⅞x5¼	248	1450	I	3	2¾	G	K,D	Own	Own	Don	Own	P	Pu	Rec..SP	SG	11	7½	899	SA	6	21	8	52	...	HE	43
5.12	16.25	...	3.12	Own......	4-3⅞x5¼	248	1450	I	5	3¾	O	...	...	Own	Don	Own	P	Pu	Rec..SP	SG	11	7½	899	SA	6¾	20½	9	52	...	HE	44
5.00	15.87	...	3.12	Own......	4-3⅞x5¼	248	1450	I	3	2¾	G	K,D	Own	Own	Don	Own	P	Pu	Rec..SP	CH	11	7½	899	FK	6	21	8	52	††8	HE	45
5.00	15.87	...	3.12	Own......	4-3⅞x5¼	248	1450	I	5	3¾	O	...	...	Own	Don	Own	P	Pu	Rec..SP	CH	11	7½	899	FK	6¾	20½	9	52	††8	HE	46
5.00	14.62	...	2.75	Own......	4-3⅜x4¼	152	1650	I	3	2½	G	K,D	Own	Own	Don	Own	P	Pu	Rec..SP	SG	9¾	7½	1019	FK	4½	17½	6	24	...	HE	47
5.37	15.87	...	2.87	Own......	4-3⅞x5¼	248	1450	I	3	2¾	G	K,D	Own	Own	Don	Own	P	Pu	Rec..SP	SG	11	7½	899	FK	6¼	21	8	52	...	HE	48
5.37	15.87	...	2.87	Own......	4-3⅞x5¼	248	1450	I	5	3¾	O	...	...	Own	Don	Own	P	Pu	Rec..SP	SG	11	7½	899	FK	6¾	20½	9	52	...	HE	49
5.62	16.25	...	3.00	Own......	4-4.4x5½	334	1500	I	3	3¼	G	K,D	Own	Own	Don	Own	P	Pu	Rec..SP	SG	14	8½	707	FK	10	36	11	40	...	HE	50
5.62	16.25	...	3.00	Own......	4-4.4x5½	334	1500	I	5	4¼	O	...	...	Own	Don	Own	P	Pu	Rec..SP	SG	14	8½	707	FK	11	36	11	40	...	HE	51
6.00	16.75	...	3.12	Own......	4-4.4x5½	334	1500	I	3	3¼	G	K,D	Own	Own	Don	Own	P	Pu	Rec..SP	SG	14	8½	707	FK	10	36	11	40	...	HE	52
6.00	16.75	...	3.12	Own......	4-4.4x5½	334	1500	I	5	4¼	O	...	...	Own	Don	Own	P	Pu	Rec..SP	SG	14	8½	707	FK	11	36	11	40	...	HE	53
6.00	14.62	...	1.75	Own......	4-3⅜x4¼	152	1650	I	3	2½	G	K,D	Own	Own	Don	Own	P	Pu	Rec..SP	SG	9¾	7½	1019	FK	4½	17½	6	24	...	HE	54
6.00	14.62	...	1.75	Own......	4-3⅜x4¼	152	1650	I	3	2½	G	K,D	Own	Own	Don	Own	P	Pu	Rec..SP	SG	9¾	7½	1019	FK	4½	17½	6	24	...	HE	55
4.87	14.62	...	1.87	Own......	4-3⅞x5¼	248	1450	I	3	2¾	G	K,D	Own	Own	Don	Own	P	Pu	Rec..SP	SG	11	7½	899	FK	6¼	21	8	52	...	HE	56
4.87	14.62	...	1.87	Own......	4-3⅞x5¼	248	1450	I	3	2¾	G	K,D	Own	Own	Don	Own	P	Pu	Rec..SP	SG	11	7½	899	FK	6¼	21	8	52	...	HE	57
4.87	14.62	...	1.87	Own......	4-3⅞x5¼	248	1450	I	5	3¾	O	...	...	Own	Don	Own	P	Pu	Rec..SP	SG	11	7½	899	FK	6¾	20½	9	52	...	HE	58
9.80	...	...	2.80	Own......	4-3x4	113	1400	I	3	2⅛	G	K,D	Own	MS-Z	Don	Own	P	TS	Roc..SP	SG	8½	6	1157	FK	3¼	11	5	8	†††	HE	59
7.40	15.80	...	3.00	Own...I-4	4-3⅜x4¼	152	1650	I	3	2½	G	K,D	Own	Own	Don	Own	P	Pu	Rec..SP	SG	9¾	7½	1019	FK	4½	17½	6	24	**	HE	60
7.40	14.30	...	2.60	Own...I-6	4-3⅞x5¼	248	1450	I	3	2¾	G	K,D	Own	Own	Don	Own	P	Pu	Rec..SP	SG	11	7½	899	FK	6¼	21	8	52	**	HE	61
7.40	14.30	...	2.60	Own..ID-6	4-3⅞x5¼	248	1450	I	5	3¾	O	...	Own	Own	Don	Own	P	Pu	Rec..SP	SG	11	7½	899	FK	6¾	20½	9	52	**	HE	62
7.30	15.20	...	2.80	Own...I-9	4-4.4x5½	335	1500	I	3	3¼	G	K,D	Own	Own	Don	Own	P	Pu	Own..SP	SG	14	8½	707	FK	10	36	11	40	**	HE	63
7.30	15.20	...	2.80	Own..ID-9	4-4.4x5½	335	1500	I	5	4¼	O	...	Own	Own	Don	Own	P	Pu	Own..SP	SG	14	8½	707	FK	11	36	11	40	**	HE	64
4.50	5.75	10.0	2.50	Own......	2-4 11/16x5½	190	1250	I	2	2¼	G	...	Wico	Mar	Don	Own	P	TS	Own..SP	SG	9 11/16	7¼	1250	SA	7	14	7	16	...	Ele	65
4.40	6.30	11.0	2.90	Own......	2-5½x6¾	321	975	I	2	2¾	G	D	Wico	Mar	Don	Own	P	TS	Own..SP	SG	12 11/16	7⅜	975	SA	8¾	14	11	29	...	Ele	66
4.38	6.25	11.0	2.75	Own...AR	2-5½x6¾	321	975	I	2	2¼	G	D,K	Wico	Mar	Don	Own	P	TS	Own MD	SG	12 11/16	7⅜	975	SA	8¾	20	11	32	...	Ele	67
4.38	6.25	11.0	2.75	Own...AO	2-5½x6¾	321	975	I	2	2¼	G	D,K	Wico	Mar	Don	Own	P	TS	Own MD	SG	12 11/16	7⅜	975	SA	8¾	20	11	32	...	Ele	68
6.50	8.75	12.50	3.00	Own...GM	2-6⅛x7	412	975	I	2	3	D	G	Wico	Mar	Don	Own	P	TS	Own..SP	SG	12⅝	8½	975	FK	13	17	11	28	...	Ele	69
...	...	...	2.00	Own...D	2-6¾x7	501	900	I	2	3	D	G	E-A	Mar	Don	Own	P	TS	Own..SP	SG	13¼	8½	900	FK	14	23½	13	28	...	Ele	70
10.0	...	...	1.62	Own...M	2-4x4	101	1650		2	...	G	...	DR	Mar	Don	Own	P	TS	Op...SP	SG	6¾	6	1730	FK	4	10	5	6½	...	Ele	71
5.33	11.5	...	2.50	Own...R	2-5¾x8	416	1000	I	2	4	O	...	...	BS	Don	Own	P	TS	Own MD	SG	12¼	9	1000	SA	14⅛	22	13	9	...	Ele	72
...	...	...	1.31	Wis...AEH	1-3x3¼	23	N	L	2	(r)	G	...	FM	SZ	Uni	Wis	CS	A	Own....	WG	4	V	...	FK	...	2¾	1½	½	2	HC	73
...	...	...	3.22	Cont...N62	4-2⅜x3½	62	1800	...	...	...	G	...	AL	Mar	Don	...	P	TS	Roc..SP	SG	6	5¼	1990	FK	1½	7	3.3	3		Ele	74
14.80	...	...	2.79	Cont...F140	4-3 7/16x4⅜	140	1500	L	3	2¼	G	D	AL	Mar	Don	Novi	P	Pu	BB...SP	SG	9½	6	1224	FK	2¾	13	5	21	**	Ele	75
14.80	...	...	2.79	Cont...F140	4-3 7/16x4⅜	140	1500	L	3	2¼	G	D	AL	Mar	Don	Novi	P	Pu	BB...SP	SG	9½	6	1224	SA	2¾	13	5	21	**	Ele	76
5.35	10.71	...	2.48	Cont...F162	4-3 9/16x4⅜	162	1500	L	3	2¼	G	D	AL	Mar	Don	Novi	P	Pu	BB...SP	SG	13½	6	838	FK	2¾	19	5	52	**	Ele	77
6.31	12.63	...	2.93	Cont...F162	4-3 9/16x4⅜	162	1500	L	3	2¼	G	D	AL	Mar	Don	Novi	P	Pu	BB...SP	SG	13½	6	838	SA	2¾	19	5	52	**	Ele	78
5.75	12.28	...	2.89	Own..H260	4-3⅞x5½	260	1350	I	3	2⅞	G	D	AL	Zen	Don	Own	P	Pu	BB...SP	SG	13½	6	863	FK	5½	19	8	52	**	Ele	79
6.46	13.82	...	3.26	Own..H260	4-3⅞x5½	260	1350	I	3	2⅞	G	D	AL	Zen	Don	Own	P	Pu	BB...SP	SG	13½	6	863	SA	5½	19	8	52	**	Ele	80
5.75	12.28	...	2.89	OHD...260	4-3⅞x5½	260	1350	I	3	2⅞	O	...		Bos	Don	Bos	P	Pu	BB...SP	SG	13½	6	863	FK	5¾	19	8	52	**	Ele	81
6.01	12.02	...	2.78	Cont...F226	6-3 5/16x4⅜	226	1500	L	4	2⅜	G	...	AL	Mar	Don	Novi	P	Pu	BB...SP	SG	16	6	838	FK	4	23	6	52	**	Ele	82
12.07	...	...	2.54	Own...J382	4-4½x6	382	1350	I	3	3¼	G	D	AL	Zen	Don	Own	P	Pu	BB...SP	SG	16	6	730	FK	7	27½	10	66	**	Ele	83
12.07	...	...	2.54	Own JD382	4-4½x6	382	1350	I	3	3¼	O	...	...	Bos	Don	Bos	P	Pu	BB...SP	SG	13½	6	730	SA	7	27½	10	66	**	Ele	84

For abbreviations, see pages 140 and 141

For Directory of the Manufacturers listed above, see page 63.

CURRENT MODELS OF

Line Number	TRACTOR MAKE AND MODEL	GENERAL: Wheelbase (In.)	GENERAL: Minimum Turning Radius Outside (Ft.)	GENERAL: Ground Clearance (In.)	GENERAL: Shipping Weight with Rubber Tires (Lb.)	GENERAL: TREAD (In.) Minimum	GENERAL: TREAD (In.) Maximum	DRAW-BAR: Lateral Adjustment (In.)	DRAW-BAR: Height Above Ground (In.)	OVERALL DIMENSIONS: Length (In.)	OVERALL DIMENSIONS: Width (In.)	OVERALL DIMENSIONS: Height—To Highest Point (In.)	Standard Equipment	WHEELS: STEEL Diam. and Face: Front (In.)	WHEELS: STEEL Diam. and Face: Rear (In.)	WHEELS: TIRE SIZE: Front (In.)	WHEELS: TIRE SIZE: Rear (In.)	HP. RATING: Belt	HP. RATING: Drawbar	Nebraska Test Number	Power Take-off	Number of Forward Speeds	Number of Reverse Speeds	Travel Speeds at Normal Governed Engine R.P.M. (M.P.H.) with Standard Wheels: First	Second	Third
1	M-M .... Standard-R	88	10	11½	3000	47F	88	7¾	12	109	82	68½	RT	....	....	6.00/15	10/34	20.49	15.58	NT	Op	4	1	2.40	3.40	4.30
2	.... Universal-R	76	8	22†	3050	8	88	7¾	12	116	82	61¼●	RT	....	....	6.00/15	10/34	20.49	15.58	341	Op	4	1	2.40	3.40	4.30
3	.... Industrial-R	88½	12	11½	3650	47¼F	....	N	16	104	59	63½	RT	....	....	7.50/16	12.00/24	22.00	17.00	NT	Op	4	1	2.20	3.20	4.10
4	.... Universal-RN	76¾	7½	22	2950	52	88	7¾	12	116	82	68½	RT	....	....	6.00/12	10/34	20.49	15.58	NT	Op	4	1	2.40	3.40	4.30
5	.... Universal-RE	84½	....	22	3250	52	88	7¾	12	125	82	63½	RT	....	....	5.00/15	10/34	20.49	15.58	NT	Op	4	1	2.40	3.40	4.30
6	.... Universal-U	88	8½	25	5300	9	83R	15½	15	140	84½	91½	Op	24x5	50x10	6.00/16	12/38	38.48	28.32	319	Op	5	1	2.70	3.80	4.40
7	.... Standard-U	80	12	24	5300	50½F	57R	15½	15	130	70	91⅞	Op	28x5	50x10	6.00/16	12/38	38.12	30.86	310	Op	5	1	2.70	3.80	4.40
8	.... Industrial-U	79½	16	14	7400	54½R	....	N	20	126	76	74●	RT	....	....	8.25/20	12.00/28	38.48	28.32	NT	Op	5	1	2.30	3.20	3.70
9	.... G	82½	14	11½	7000	53¼F	62R	19	14¼	137	77½	71	RT	....	....	7.50/18	14/34	48.00	36.00	NT	Op	5	1	2.50	3.50	4.10
10	.... Standard-Z	72¾	12	24	3760	48F	....	11¼	13½	124	66	65	RT	....	....	5.50/16	11/38	30.00	23.00	NT	Op	5	1	2.40	3.60	4.60
11	.... Universal-ZE	90	....	25	4100	54R	88R	11¼	13½	136	85	73	RT	....	....	5.50/16	11/38	30.00	23.00	NT	Op	5	1	2.40	3.60	4.60
12	.... Universal-ZU	83	8	25	3750	54R	88R	11¼	13½	129	85	73	RT	....	....	5.50/16	11/38	30.00	23.00	NT	Op	5	1	2.40	3.60	4.60
13	.... Universal-ZN	83	8	25	3750	54R	88R	11¼	13½	126	85	73	RT	....	....	7.50/10	11/38	30.00	23.00	NT	Op	5	1	2.40	3.60	4.60
14	.... Industrial-UTIL	87 1/16	17	14	7400	54½R	62⅝	N	20	134 11/16	77	72	RT	....	....	8.25/20	12.00/28	38.12	30.86	NT	Op	5	●●	2.30	3.20	3.70
15	Oliver Rowcrop-66HC	86¾	8¾	18 1/16	2380	56	88	20 1/16	15¾	131¾	80¼	72●	RT	....	....	4.00/15	9/38	....	....	NT	Op	6	2	2.46	3.25	4.25
16	.... Standard-66HC	73½	10	11½	2330	49¾	50¾	20 1/16	12¾	124½	59	66●	RT	....	....	4.00/15	10/24	....	....	NT	Op	6	2	2.50	3.30	4.32
17	.... 66-Ind.	73½	10	10	2300	49¾	50¾	20 1/16	11¼	124½	57¾	64½●	RT	....	....	5.00/15	9/24	....	....	NT	Op	6	2	1.79	2.37	3.10
18	.... Rowcrop-77HC	90⅞	9¼	18½	3240	60	92½	20 1/16	15¾	139¼	80¼	74●	RT	....	....	5.50/16	11/38	38.82	34.20	425	Op	6	2	2.45	3.22	4.27
19	.... Standard-77HC	78¼	10¾	13¼	3360	....	52½	20 1/16	13¾	129½	64½	69●	RT	....	....	5.50/16	12/26	29.90	22.34	405	Op	6	2	2.48	3.27	4.33
20	.... 77-Ind.	85⅝	13¼	13	4200	52½	62½	20 1/16	13	127⅞	79	71●	RT	....	....	7.00/20	12.00/24	....	....	NT	Op	6	2	1.95	2.59	3.44
21	 90	80	14	10½	6200	53	53	18½	15	132¾	68¾	80¼	SW	29x6	48x12	7.50/18	14/30	49.04	34.21	183	Op	4	2	2.23	3.32	4.32
22	 99	80	14	10½	6400	53	53	18½	15	132¾	68¾	80¼	SW	29x6	48x12	7.50/18	14/30	....	....	NT	Op	4	1	2.23	3.32	4.32
23	.... 900 Ind.	92¼	15	12½	10400	49¼	82¼	30	15 1/16	145	96	87	RT	....	....	7.00/20	14.00/32	63.00	50.00	.....	.....	4	1	2.82	5.48	9.03
24	.... Standard 88HC	79¼	11	12¼	4635	54	82	20 1/16	14 1/16	133 11/16	66	69 1/16	RT	....	....	6.00/16	13/26	44.96	38.56	391	Op	6	2	2.48	3.22	4.27
25	.... Rowcrop 88HC	93¾	9¾	18⅝	4970	60	92½	20 1/16	14¾	143 1/16	80¼	75	RT	....	....	6.00/16	12/38	44.66	38.40	388	Op	6	2	2.49	3.22	4.28
26	.... 88 Ind.	86⅝	13½	12	5255	54	68	20 1/16	13 1/16	139 11/16	82	68 11/16	RT	....	....	7.00/20	13.00/24	....	....	NT	Op	6	2	2.00	2.59	3.44
27	Silver King 3WH-Std	83¾	7	29	3350	56	84	27	14	131	72½	78	RT	....	....	7.50/16	10.00/36	34.53	29.60	424	Op	4	1	2.67	4.10	5.93
28	.... 4WH-RC	66 1/16	9	16½	3000	44	72	27	15	113¾	67½	73	RT	....	....	6.50/16	10.00/28	....	....	NT	Op	4	1	3.25	5.18	7.20
29	Tiger PTD-5	46	8	13	518	26	40	N	13	64	26	35	RT	....	....	4.00/8	5.00/12	5.10	4.50	....	St	1	1	8.00	.....	...

ABBREVIATIONS

°°—Included in transmission.
†—Clearance at rear axle.
●—Rated using gasoline.
•—Rated using distillate.
‡—Clearance at front axle.
●—To top of steering wheel.
^—To top of hood.
♠—5 with rubber tires.
▾—Minimum.
††—Capacity final drive—Each case.

●●—With reversing transmission and 6 reverse speeds, from a Low Reverse of 1.5 and 5 other reverse speeds from 2 to 10.9 M.P.H.
♦—Total capacity final drive cases.
♠—When equipped with pneumatic tires.
A—Air. **AL**—Electric Auto-Lite Co.
(a)—2 1/16, 2 11/16, 2 3/16.
Au—Auburn Clutch Co.
BB—Borg & Beck Div.
(b)—Roller bearing.

Bos—American Bosch Corp.
Br—Briggs & Stratton Corp.
BS—Scintilla Magneto Div.
Car—Carter Carburetor Corp.
CH—Chain. **Chr**—Chrysler Corp.
Cont—Continental Motors Co.
CS—Circulating splash.
D—Distillate. **DA**—Divided axle.
DO—Double plate operating in oil.
DR—Delco-Remy Div.
Don—Donaldson Co.

DV—Donaldson or Vortox.
E-A—Edison Splitdorf or Auto-Lite.
Ele—Electric starting.
F—Front wheel tread.
FK—Front axle knuckle.
FM—Fairbanks Morse & Co.
FO—Fork type. **G**—Gasoline.
(h)—3" Rear; Front S.A.E. 212 Roller; Center 2.75.
Han—Handy Governor Corp.
HC—Hand crank.

CURRENT MODELS OF

Line Number	TRACTOR MAKE ND MODEL	GENERAL: Minimum Turning Radius Outside (Ft.) (Minimum Tread)	GENERAL: Ground Clearance (In.)	GENERAL: Shipping Weight (Lb.) (Minimum Standard Shoe (Minimum Tread)	GENERAL: Tread Minimum (In.)	GENERAL: Tread Maximum (In.)	DRAW-BAR: Lateral Adjustment—At Pin (In.)	DRAW-BAR: Height Above Ground (In.)	OVERALL DIMENSIONS: Length (In.)	OVERALL DIMENSIONS: Width—Maximum (In.) (Minimum Tread)	OVERALL DIMENSIONS: Height to Highest Point (In.)	TRACK: Width or Shoe—Standard (In.)	TRACK: Length on Ground (In.)	HP. RATING: Belt	HP. RATING: Drawbar	Power Take-off	No. of Forward Speeds	No. of Reverse Speeds	MAXIMUM DRAWBAR PULL AT NORMAL GOVERNED ENGINE R.P.M.: First Gear (Lb.)	Second Gear (Lb.)	Third Gear (Lb.)	Fourth Gear (Lb.)	Fifth Gear (Lb.)	Sixth Gear (Lb.)	Travel Speeds at Normal Governed Engine R.P.M.: First Gear (M.P.H.)	Second Gear (M.P.H.)	Third Gear (M.P.H.)	Fourth Gear (M.P.H.)
1	Allis-Chalmers HD-5	5⅞	11¼	10800	44	60	21	13 11/16	124⅞	62½	60⅝♦	13	64¼	50.25	40.26	Op	5	1	10000	8890	4200	3375	2220	.....	1.46	2.44	3.30	3.98
2	.... HD-7	7	9 11/16	13830	52	63	19½	11⅝	127¼	70	66 5/16♦	16	67	71.08	60.10	Op	4	1	12500	9705	7015	4070	.....	.....	1.58	2.19	2.97	5.00
3	.... HD-10	8⅛	11⅝	21000	62	74	32	14⅝	150⅞	82¼	75⅛	18	84 11/16	101.62	86.63	Op	6	2	18650	14050	10606	7720	5545	3885	1.57	2.06	2.88	3.54
4	.... HD-19H	10⅛	16⅛	40000	....	84	44	19⅞	190¾	109¼	94 1/16	24	106⅜	163.00	.....	.....	‡	‡‡	▾▾	‡	.....	.....	.....	.....	▾▾	‡	.....	.....
5	Caterpillar Diesel-D2	.....	9	6710	40	50	20	12	107⅝	55¾	57⅝	12	54½	32.00	38.00	Op	5	1	6250	4700	3600	3070	1980	.....	1.70	2.50	3.00	3.60
6	.... Diesel-D4	.....	11⅛	10065	44	60	21	14¼	120 11/16	62	60⅝	13	61⅛	43.00	48.00	Op	5	1	9450	6990	5470	4180	2690	.....	1.70	2.40	3.00	3.70
7	.... Diesel-D6	.....	12½	16725	60	74	27¾	14	149 1/16	80⅛	75¼	16	85⅝	65.00	75.00	Op	5	4	15500	10750	7320	4730	3130	.....	1.40	2.30	3.20	4.40
8	.... Diesel-D7	.....	15½	24630	74	74	36	17¼	162¼	97	80	20	93¼	92.84	80.44	Op	5	4	21351	13454	9090	5994	4550	.....	1.40	2.20	3.20	4.60
9	.... Diesel-D8	.....	10½	34300	78	78	43	17½	183	103¾	90	22	97⅝	144.00	130.00	Op	5	3	28700	21300	16800	12600	8550	.....	1.70	2.30	2.80	3.70
10	I.H.C. T-6	8½	8¾	6750	40	50	19¾	12¼	104	53	62¼	12	58⅝	38.96	32.92	Op	5	1	7652	5215	3579	2767	1756	.....	1.50	2.20	3.10	3.80
11	.... TD-6	8½	8¾	7010	40	50	19¾	12¼	104	53	62¼	12	58⅝	38.23	29.49	Op	5	1	7160	4929	3368	2641	1661	.....	1.50	2.20	3.10	3.80
12	.... T-9	6	10⅛	9300	44	60	19⅞	13⅝	114	59⅛	66⅜	13	63 1/16	48.69	42.98	Op	5	1	9868	6804	4556	3650	2434	.....	1.50	2.20	3.00	3.90
13	.... TD-9	6	10⅛	9540	44	60	19⅞	13⅝	114	59⅛	66⅜	13	63 1/16	46.91	38.88	Op	5	1	9014	6637	4368	3551	2304	.....	1.50	2.20	3.00	3.90
14	.... TD-14A	7½	11⅝	15550	58	74	27⅞	13½	134⅛	74⅛	73¾	16	78⅝	72.00	60.50	Op	6	2	14400	10900	8250	6300	4560	3290	1.57	2.05	2.65	3.36
15	.... TD-14A	8 1/12	14	22250	62	74	31¼	15⅜	158¼	82¼	79	20	84⅝	101.00	87.00	Op	6	2	19480	14600	11640	8640	6240	4780	1.66	2.18	2.70	3.52
16	.... TD-24	9⅝	13⅞	37500	....	80	39¼	17¼	182¼	102	89⅝	22	●●	167.00	140.00	Op	8	8	33600	26800	21100	16200	11800	♦♦	1.60	2.00	2.40	3.10
17	Oliver .... "CleTrac"-HG	8 1/12	20	3125	31	68	25	13¾	102½	41⅛	50♦	6	50	22.00	18.00	Op	3	1	3060	2170	1080	.....	.....	.....	2.02	3.19	5.25	....
18	.... "CleTrac"-AG-6	7 11/12	13½	7066	42	50	21	11⅜	103½	58	54♦	12	62	38.80	30.00	Op	3	1	6020	4160	2640	.....	.....	.....	1.78	2.62	3.74	....
19	.... "CleTrac"-AD	7 11/12	13½	7662	42	50	21	11⅜	101½	58	54♦	12	62	38.00	30.50	Op	3	1	6500	4520	2800	.....	.....	.....	1.78	2.62	3.74	....
20	.... "CleTrac"-BGS	8⅓	12	8614	44	52	14⅜	12⅛	108	62¼	64♦	14	63	50.00	38.00	Op	4	2	7600	5700	4200	2000	.....	.....	1.80	2.63	3.44	5.40
21	.... "CleTrac"-BD	8⅓	12	9374	44	52	14⅜	12⅛	108	62¼	64♦	14	63	48.00	38.05	Op	4	2	8012	5586	4127	2000	.....	.....	1.80	2.64	3.45	5.41
22	.... "CleTrac"-DG	9	12⅛	12472	48	61	16⅜	14¼	128	69	67♦	16	74¾	69.00	61.20	Op	4	2	11000	9350	7000	4156	.....	.....	1.84	2.48	3.31	5.30
23	.... "CleTrac"-DD	9	12⅛	13233	48	61	16⅜	14¼	128	69	67♦	16	74¾	67.71	61.19	Op	4	2	11816	10022	7596	4568	.....	.....	1.70	2.30	3.06	4.88
24	.... "CleTrac"-FDE	14 5/12	18¼	29760	60	....	25	17¾	170	103⅛	86 5/16♦	22	96	130.00	110.00	Op	4	2	26800	15900	11000	6100	.....	.....	1.61	2.74	3.67	4.95
25	Ustrac 10A	.....	6	3425	29½	....	8	15	92	43⅛	54	7½	61½	22.50	16.37	St	4	4	3256	3249	1747	815	.....	.....	0.92	1.89	3.45	5.87

ABBREVIATIONS

▾—Electric starter optional.
♦—Exclusive of tail pipes.
°°—Included in transmission.
●●—Track length on ground 104½".
††—Capacity final drive—Each case.

♦♦—8530 lbs. in 6th gear, 6580 lbs. in 7th, 4400 lbs. in 8th.
^^—5.20 MPH in 6th gear, 6.20 MPH in 7th, 7.80 MPH in 8th.
‡‡—8 reverse speeds ranging from 1.60 to 7.70.
♠♠—192 qts. including rear main frame cases.

▾▾—1st speed range 0-3 MPH with 36,000 lb. pull.
‡—2nd speed range 0-7 MPH with 28,000 lb. pull.
‡‡—Low reverse speed range 0-5.5 MPH with 36,000 lb. pull.

^—With converter. **AL**—Electric Auto-Lite Co.
Aub—Auburn Clutch Co.
Bos—American Bosch Co.
Clu—Clutches.
Cont—Continental Motors Corp. **D**—Distillate.
Dif—Differential. **Don**—Donaldson Co.

For Directory of the Manufacturers listed above, see page 63.

WHEEL TYPE—*Concluded*

Travel Speeds at Normal Governed Engine R.P.M. with Standard Wheels				ENGINE							FUEL											BELT PULLEY				CAPACITIES						
Fourth	Fifth	Sixth	Reverse	Make and Model	Number of Cylinders—Bore and Stroke (In.)	Piston Disp. (Cu. In.)	R.P.M. at Governed Speed	Valve Arrangement	Number of Main Bearings	Diameter of Main Bearings	Standard	Optional	Ignition—Make	Carburetor or Injector Pump—Make	Air Cleaner—Make	Governor—Make	Oiling System—Type	Cooling System—Type	Clutch—Make and Type	Final Drive—Type	Diameter (In.)	Face (In.)	Normal R.P.M.	Steering Type	Cooling System (Gal.)	Fuel Tank (Gal.)	Crankcase (Qts.)	Transmission (Qts.)	Final Drive Case (Qts.)	Starting Method	Line Number
12.30	......	......	2.70	Own...EE	4-3⅝x4	165	1400	Ih	2	3	G	D	DR	Mar	Uni	Own	P	Pu	TD...SP	SG	12¼	6	933	FK	3⅜	14	7	18	**	HE	1
12.30	......	......	2.70	Own...EE	4-3⅝x4	165	1400	Ih	2	3	G	D	DR	Mar	Uni	Own	P	Pu	TD...SP	SG	12¼	6	933	SA	3⅜	14	7	18	**	HE	2
11.50	......	......	2.50	Own...EE	4-3⅝x4	165	1500	Ih	2	3	G	D	DR	Mar	Uni	Own	P	Pu	Roc..SP	SG	12¼	6	1000	FK	3⅜	14	7	18	**	HE	3
12.30	......	......	2.70	Own...EE	4-3⅝x4	165	1400	Ih	2	3	G	D	DR	Mar	Uni	Own	P	Pu	TD...SP	SG	12¼	6	933	FO	3⅜	14	7	18	**	HE	4
12.30	......	......	2.70	Own...EE	4-3⅝x4	165	1400	Ih	2	3	G	D	DR	Mar	Uni	Own	P	Pu	TD...SP	SG	12¼	6	933	FK	3⅜	14	7	18	**	HE	5
6.40	14.80	......	2.10	Own283A-4	4-4¼x5	283	1275	I	3	2 11/16	G	D	DR	Mar	Uni	Own	P	Pu	TD...SP	SG	16	7	727	SA	6	21½	9	52	**	HE	6
6.40	14.80	......	2.10	Own283A-4	4-4¼x5	283	1275	I	3	2 11/16	G	D	DR	Mar	Uni	Own	P	Pu	TD...SP	SG	16	7	727	FK	6	21½	9	52	**	HE	7
5.40	12.50	......	1.80	Own283A-4	4-4¼x5	283	1300	I	3	2 11/16	G	D	DR	Mar	Uni	Own	P	Pu	Roc..SP	SG	16	7	741	FK	6	21½	9	52	**	HE	8
6.00	13.80	......	2.00	Own403A-4	4-4⅝x6	403	1100	I	3	2 11/16	G	D	DR	Mar	Don	Own	P	Pu	TD...SP	SG	16	7	627	FK	12	29	9	52	**	HE	9
6.30	13.10	......	2.20	Own206B-4	4-3⅝x5	206	1500	Ih	3	(h)	G	D	DR	Mar	Don	Own	P	Pu	TD...SP	SG	15½	7	706	FK	3¾	19	7	28	**	HE	10
6.30	13.10	......	2.20	Own206B-4	4-3⅝x5	206	1500	Ih	3	(h)	G	D	DR	Mar	Don	Own	P	Pu	TD...SP	SG	15½	7	706	FK	3¾	19	7	28	**	HE	11
6.30	13.10	......	2.20	Own206B-4	4-3⅝x5	206	1500	Ih	3	(h)	G	D	DR	Mar	Don	Own	P	Pu	TD...SP	SG	15½	7	706	SA	3¾	19	7	28	**	HE	12
6.30	13.10	......	2.20	Own206B-4	4-3⅝x5	206	1500	Ih	3	(h)	G	D	DR	Mar	Don	Own	P	Pu	TD...SP	SG	15½	7	706	FO	3¾	19	7	28	**	HE	13
5.40	12.05	......	**	Own283A-4	4-4¼x5	283	1300	I	3	2 11/16	G	D	DR	Mar	Uni	Own	P	Pu	Roc..SP	SG	16	7	741	FK	6	21½	9	52	**	HE	14
5.60	6.61	11.42	2.56	Own......	4-3 7/16x3½	129	1600	I	3	2¼	G	......	DR	Mar	Don	Own	PS	Pu	BB...SP	SG	11⅞	7¼	987	SA	3	10	4	18	**	Ele	15
5.70	6.72	11.60	2.60	Own......	4-3 7/16x3½	129	1600	I	3	2¼	G	......	DR	Mar	Don	Own	PS	Pu	BB...SP	SG	11⅞	7¼	987	FK	3	10	4	18	**	Ele	16
4.08	8.07	13.90	1.87	Own......	4-3 7/16x3½	129	1600	I	3	2¼	G	......	DR	Mar	Don	Own	PS	Pu	BB...SP	SG	11⅞	7¼	987	FK	3	10	4	18	**	Ele	17
5.62	6.58	11.47	2.58	Own......	6-3 7/16x3½	194	1600	I	4	2¼	G	......	DR	Mar	Don	Own	PS	Pu	BB...SP	SG	11⅞	7¼	992	SA	4½	16½	5	18	**	Ele	18
5.70	6.68	11.65	2.61	Own......	6-3 7/16x3½	194	1600	I	4	2¼	G	......	DR	Mar	Don	Own	PS	Pu	BB...SP	SG	11⅞	7¼	992	FK	4½	16½	5	18	**	Ele	19
4.52	9.06	15.80	2.08	Own......	6-3 7/16x3½	194	1600	I	4	2½	G	......	DR	Mar	Don	Own	PS	Pu	BB...SP	SG	11⅞	7¼	992	FK	4½	16½	5	18	**	Ele	20
5.55	......	......	3.23	Own......	4-4¾x6¼	443	1125	I	3	3	D, O	G	Bos	Mar	Don	Own	P	Pu	BB...SP	SG	16¾	8¼	596	FK	10½	34	12	48	**	HC	21
5.55	......	......	3.23	Own......	4-4¾x6¼	443	1125	I	3	3	G	......	Bos	Mar	Don	Own	P	Pu	BB...SP	SG	16¾	8¼	606	FK	10½	34	12	48	**	HC	22
17.95	......	......	4.11	Own......	4-4¾x6¼	443	1200	I	3	3	G	......	Bos	Mar	Don	Own	P	Pu	Roc..SP	SG	......	......	......	FK	10½	40	12	48	**	Ele	23
5.53	6.80	11.70	2.54	Own......	6-3½x4	231	1600	I	4	2⅝	G	......	DR	Mar	Don	Own	PS	Pu	BB...SP	SG	11⅞	7¼	992	FK	4½	20	6	18	**	Ele	24
5.55	6.82	11.75	2.55	Own......	6-3½x4	231	1600	I	4	2⅝	G	......	DR	Mar	Don	Own	PS	Pu	BB...SP	SG	11⅞	7¼	992	SA	4½	20	6	18	**	Ele	25
4.46	9.27	15.95	2.05	Own......	6-3½x4	231	1600	I	4	2⅝	G	......	DR	Mar	Don	Own	PS	Pu	BB...SP	SG	11⅞	7¼	992	FK	4½	20	6	18	**	Ele	26
19.10	......	......	1.97	Cont..F162	4-3 7/16x4⅜	162	1800	L	3	2¼	G	......	DR	Mar	Don	Pie	P	Pu	BB...SP	SG	6 11/16	8	1800	FO	3	11¾	5	7	††1½	Ele	27
23.20	......	......	2.39	Cont..F162	4-3 7/16x4⅜	162	1800	L	3	2¼	G	......	DR	Mar	Don	Pie	P	Pu	BB...SP	SG	6 11/16	8	1800	FK	3	11¾	5	7	††1½	Ele	28
......	......	......	8.00	Br......14	1-2⅝x2⅝	14	3200	L	......	......	G	......	Br	Br	Uni	Br	PS	A	TD..MD	SGC	......	......	......	SA	......	1	½	1	1	HC	29

HE—Hand or Electric.
Hel—Helical gear.
Herc—Hercules Motors Corp.
I—In head (Valves).
Ih—Horizontal—In head (Valves).
K—Kerosene. L—"L" head (Valves).
Le—Le Roi Co. Lg—Long Mfg. Div.
(m)—From 800 to 2000.
Mar—Marvel-Schebler Carb. Div.
MD—Multiple disc operating dry.
MS-Z—Marvel-Schebler or Zenith.
N—No or none.
(n)—Minimum 12", maximum 22".
Novi—Novi Equipment Co.
NP—New Process Co.
NS—Non-circulating splash.
NT—Not tested.
O—Diesel fuel.
Op—Optional. P—Pressure.
Pie—Pierce Governor Co.
Piv—Pivot.
PS—Pressure and splash.
Pu—Pump.
R—Rear wheel tread.
(r)—Taper roller with 1¼" shaft.
RA—Rockford-Atwood.
Roc—Rockford Drilling Mach. Div.
RT—Rubber tires. SA—Solid axle.
SB—Spiral bevel gear.
SG—Spur gear.
SGC—Spur gear and chain.
SP—Single plate, dry. St—Standard.
SW—Steel wheels.
SZ—Stromberg or Zenith.
TD—Twin Disc Clutch Co.
Til—Tillotson Mfg. Co.
TS—Thermo-Syphon.
Uni—United Air Cleaner Div.
U-O—United and Oaks products.
V—Vee type pulley.
Vor—Vortox Mfg. Co.
WG—Worm gear.
Wis—Wisconsin Motor Corp.
Zen—Zenith Carburetor Div.

TRACK LAYING TYPE

Travel Speeds at Normal Governed Engine R.P.M.				ENGINE									FUEL											BELT PULLEY				CAPACITIES						
Fifth Gear (M.P.H.)	Sixth Gear (M.P.H.)	Low Reverse (M.P.H.)	High Reverse (M.P.H.)	Make and Model	Cycle	No. of Cylinders—Bore and Stroke (In.)	Displacement (Cu. In.)	R.P.M. at Governed Speed	S.A.E. or Tax Hp.	Valve Arrangement	No. of Main Bearings	Diam. Main Bearings (In.)	Standard	Optional	Ignition—Make	Carburetor or Injector Pump—Make	Air Cleaner—Make	Governor—Make	Oiling System—Type	Cooling System—Type	Clutch—Make and Type	Drive Type to Traction Members	Diameter (In.)	Face (In.)	Normal R.P.M.	Steering Type	Cooling System (Gal.)	Fuel Tank (Gal.)	Crankcase (Qts.)	Transmission (Qts.)	Final Drive Case (Qts.) (Each Case)	Starting Method	Line Number
5.47	....	1.99	....	GM.....2-71	2	2-4¼x5	142	1800	14.5	I	3	3½	O	....	No	GM	Uni	GM	P	Pu	Aub..SP	SG	12	8¾	983	Clu	3¾	37	8	20	12	Ele	1
....	....	1.89	....	GM.....3-71	2	3-4¼x5	213	1500	21.7	I	4	3½	O	....	No	GM	Uni	GM	P	Pu	Aub..SP	SG	12	8¾	889	Clu	5¾	31	11	26	7	Ele	2
4.62	6.83	1.85	4.15	GM.....4-71	2	4-4¼x5	284	1800	28.9	I	5	3½	O	....	No	GM	Uni	GM	P	Pu	Roc..SP	SG	13¾	10	830	Clu	9¾	44	13	28	8	Ele	3
....	....	‡‡	....	GM.....6-71	2	6-4¼x5	426	1750	43.4	I	7	3½	O	....	No	GM	Uni	GM	P	Pu	TD..^SP	SG	20	15	430	Clu	11	100	20	19	30	Ele	4
6.10	....	2.10	....	Own.....D2	4	4-4x5	252	1525	25.6	I	5	2¾	D	....	......	Own	Don	Own	P	Pu	Own..SP	SG	12	7½	850	Clu	7¾	20	13	8	4	GE	5
5.40	....	1.90	....	Own.....D4	4	4-4½x5½	350	1400	32.4	I	5	3½	D	....	......	Own	Don	Own	P	Pu	Own..SP	SG	12	8½	840	Clu	11	25	17	20	7	GE	6
5.80	....	1.80	5.40	Own.....D6	4	6-4½x5½	525	1400	48.7	I	7	3½	D	....	......	Own	Don	Own	P	Pu	Own..SP	SG	13	12½	913	Clu	12¾	48	19	36	11	GE	7
6.00	....	1.80	5.40	Own.....D7	4	4-5¾x8	831	1000	52.9	I	5	3¾	D	....	......	Own	Don	Own	P	Pu	Own..SP	SG	17⅝	15	[illegible]	Clu	18	45	22	40	22	GE	8
4.80	....	2.20	3.70	Own.....D8	4	6-5¾x8	1246	1000	79.3	I	7	3¾	D	....	......	Own	Don	Own	P	Pu	Own..SP	SG	14 1/16	15	846	Clu	29	69	34	40	28	GE	9
5.40	....	1.70	....	Own.....6	4	4-3⅞x5¼	248	1450	24.0	I	3	2¾	G	D,K	Own	Own	Don	Own	P	Pu	Roc..SP	SG	12½	8½	811	Clu	9½	20	9	16	1	HE	10
5.40	....	1.70	....	Own.....D-6	4	4-3⅞x5¼	248	1450	24.0	I	5	3¾	O	....	Own	Own	Don	Own	P	Pu	Roc..SP	SG	12½	8½	811	Clu	10½	20	9	16	1	HE	11
5.30	....	1.70	....	Own.....9	4	4-4.4x5½	334	1400	31.0	I	3	3½	G	D, K	Own	Own	Don	Own	P	Pu	Roc..SP	SG	11	8½	878	Clu	12	31	11	22	1½	HE	12
5.30	....	1.70	....	Own.....D-9	4	4-4.4x5½	334	1400	31.0	I	5	4½	O	....	Own	Own	Don	Own	P	Pu	Roc..SP	SG	11	8½	878	Clu	13	31	11	22	1½	HE	13
4.38	5.66	1.58	3.38	Own..D-14A	4	4-4¾x6½	461	1400	36.1	I	5	3¾	O	....	Own	Own	Don	Own	P	Pu	Roc..SP	SG	11¾	11	875	Clu	19	45	16	24	3	HE	14
4.64	5.73	1.67	3.54	Own..D-18A	4	6-4¾x6½	691	1350	54.1	I	7	3½	O	....	Own	Own	Don	Own	P	Pu	Roc..SP	SG	13½	12½	844	Clu	26	60	26	30	5½	Ele	15
4.00	^^	‡‡	‡‡	Own...D-24	4	6-5¾x7	1090	1375	79.3	I	7	4½	O	....	DR	Own	Don	Own	P	Pu	Roc..DP	SG	......	......	......	PL	37	85	30	44	9	Ele	16
....	....	2.35	....	Herc..IXK3	4	4-3¼x4	123	1700	15.6	L	3	2	G	K, D	Wi	Til	Vor	Han	P	TS	Lg...SP	SG	8½	6⅛	1036	Dif	2⅝	12	5	8	⅝	HC▼	17
....	....	1.36	....	Cont...F226	4	6-3 7/16x4⅛	226	1530	28.3	L	4	2 1/16	G	K	Bos	Til	Vor	Novi	P	Pu	Lg...DP	SG	10½	8½	1130	Dif	8	16	8	32	**	HC▼	18
....	....	1.36	....	Herc..DOOC	4	4-4x4½	226	1530	25.6	I	5	3	O	....	......	Bos	Vor	Bos	P	Pu	Lg...DP	SG	10½	8½	1130	Dif	8½	16	13	32	**	Ele	19
....	....	1.80	3.44	Herc....JXD	4	6-4x4¼	320	1530	38.4	L	7	2½	G	K	DR	Til	Vor	Pie	P	Pu	Lg...DP	SG	12	8½	1150	Dif	6	23	7	36	**	Ele	20
....	....	1.80	3.45	Herc...DJXC	4	6-3¾x4½	298	1400	33.7	I	7	3	O	....	......	Bos	Vor	Bos	P	Pu	Lg...DP	SG	12	8½	1050	Dif	6	23	12	36	**	Ele	21
....	....	2.19	3.94	Herc....RXC	4	6-4⅝x5¼	529	1300	51.3	L	7	3	G	....	DR	Til	Vor	Pie	P	Pu	Lg...DP	SG	13	11	960	Dif	10½	30	12	82	**	Ele	22
....	....	2.02	3.64	Herc..DRXB	4	6-4⅜x5¼	474	1200	45.9	I	7	3½	O	....	......	Bos	Vor	Bos	P	Pu	Lg...DP	SG	13	11	904	Dif	10½	30	16	82	**	Ele	23
....	....	1.58	2.83	Herc..DFXE	4	6-5⅝x6	895	1300	75.9	I	7	4½	O	....	......	Bos	Vor	Bos	P	Pu	Lg...SP	PL	24½	15	535	Dif	15½	60	34	144	**	Ele	24
....	....	1.06	6.75	Cont........	4	4-3x4⅜	124	1800	31.2	L	3	2¼	G	K	Al	Zen	Don	Novi	P	Pu	Roc..MD	....	8	6	1800	Clu	3½	10	4	14	5½††	Ele	25

DP—Double Plate, Dry
DR—Delco-Remy Div.
Ele—Electric. G—Gasoline.
GE—Independent Gas Engine.
GM—General Motors Corp.
Han—Handy Governor Corp.
HC—Hand Crank.
Herc—Hercules Motor Corp.
HE—Hand Crank or Electric.
I—In head (Valves).
K—Kerosene. L—"L" Head.
Lg—Long Mfg. Div.
MD—Multiple disk.
No—No or None.
Novi—Novi Equipment Co.
O—Diesel fuel. Op—Optional.
P—Pressure.
Pie—Pierce Governor Corp.
Pl—Planetary. Pu—Pump.
Roc—Rockford Drilling Mach. Div.
SG—Spur Gear.
SP—Single Plate, Dry.
St—Standard.
TD—Twin Disc Clutch Co.
Til—Tillotson Mfg. Co.
TS—Thermo-Syphon.
Uni—United Air Cleaners Div.
Vor—Vortox Mfg. Co.
Wi—Wico Electric Co.
Zen—Zenith Carburetor Div.

For Directory of the Manufacturers listed above, see page 63.

AMERICAN

Line Number	Engine Make and Model	Designed for	Number of Cylinders, Bore and Stroke (In.)	Maximum Brake Hp. at Specified R.P.M.		Piston Displacement (Cu. In.)	Compression Ratio	Maximum Torque at R.P.M. (Lb. Ft.) with or without Accessories	Cylinder Liners—Type	Crankcase—Upper Half Integral with Cylinders	Valves									
				With Bare Engine	With Standard Accessories						Arrangement	Exhaust Head Material (S.A.E. No.)	Max. Head Diameter (In.) Intake	Max. Head Diameter (In.) Exhaust	Min. Port Diameter (In.) Intake	Min. Port Diameter (In.) Exhaust	Lift (In.) Intake	Lift (In.) Exhaust	Stem Diameter (In.) Intake	Stem Diameter (In.) Exhaust
1	Allis-Chalmers B-125	Tr,Ind	4-3⅜x3½	30-1800	29-1800	125.2	5.75	97-1100 (EA)	W	In	I	Sil	1.43	1.31	1.20	1.03	.378	.378	.341	.341
2	W-201	Tr,Ind	4-4x4	44-1800	40-1800	201.1	5.50	128-1200 (EA)	W	In	I	XCR	1.68	1.50	1.50	1.32	.376	.376	.372	.372
3	U-318	Tr,Ind	4-4½x5	56-1400	51-1400	318.1	4.75	200- 900 (EA)	W	In	I	Sil	2.03	1.78	1.75	1.50	.375	.375	.372	.372
4	E-563	Tr,Ind	4-5¼x6½	81-1050	74-1050	562.6	5.20	400- 650 (EA)	W	In	I	Sil	2.21	2.21	2.00	2.00	.440	.417	.497	.497
5	L-844	Tr,Ind	6-5¼x6½	121-1050	110-1050	844.3	5.20	590- 650 (EA)	W	I	In	Sil	2.21	2.21	2.00	2.00	.440	.417	.497	.497
6	Autocar 377	T	6-4x5	119-2800	....	377.0	5.90	292-1400 (BE)	N	Se	L	SilX10	1.90	1.78	1.68	1.56	.406	.406	.434	.496
7	447	T	6-4¼x5¼	146-2700	....	447.0	5.90	352-1300 (BE)	N	Se	L	SilX10	2.12	1.93	1.93	1.79	.452	.452	.434	.496
8	501	T	6-4½x5¼	165-2700	....	501.0	5.90	402-1100 (BE)	N	Se	L	SilX10	2.12	1.93	1.93	1.79	.452	.452	.434	.496
9	Brennan 20	Ind	4-2¼x3⅛	20-3800	15-3800	50.0	7.40	34-3200 (EA)	N	Se	L	Sil	1.12	1.00	.875	.875	.250	.250	.312	.312
10	Imp.	M	4-2¼x3⅛	25-4000	20-4000	50.0	7.40	34-3200 (EA)	N	Se	I	Sil	1.12	1.00	.875	.875	.250	.250	.312	.312
11	75	T,In	6-3⅜x4⅛	90-3500	75-3300	230.3	6.7	175-1000 (EA)	N	In	L	Sil	1.60	1.50	1.37	1.25	.343	.343	.312	.312
12	Fisherman	M	6-3⅜x4⅛	95-3200	92-3200	230.3	5.50	184-1250......	N	In	L	Sil	1.50	1.37	1.37	1.25	.343	.343	.312	.312
13	CE	Ind	4-4½x5	54-1600	45-1600	318.0	5.00	203-1000 (EA)	N	Se	L	Sil	2.00	2.00	1.87	1.87	.375	.375	.375	.375
14	E-4	M	4-4½x5	54-1600	45-1600	318.0	5.00	203-1000 (EA)	N	Se	L	Sil	2.00	2.00	1.87	1.87	.375	.375	.375	.375
15	B-70	T,B,Tr,Ind	6-4x5½	90-2000	75-2000	415.0	4.50	278- 900 (EA)	N	Se	I	Sil	2.12	2.12	2.00	2.00	.375	.375	.437	.437
16	100	M	6-4x5½	94-2000	80-2000	415.0	6.00	278- 900 (EA)	N	Se	I	Sil	2.12	2.12	2.00	2.00	.375	.375	.437	.437
17	B-100	T,B,Tr,Ind	6-4⅜x5½	94-2000	80-2000	496.0	4.50	350-1200 (EA)	N	Se	I	Sil	2.12	2.12	2.00	2.00	.375	.375	.437	.437
18	125	M	6-4⅜x5½	110-2200	94-2200	496.0	6.00	350-1200 (EA)	N	Se	I	Sil	2.12	2.12	2.00	2.00	.375	.375	.437	.437
19	150	M	6-4½x6½	150-2000	130-2000	620.3	6.00	500-1200 (EA)	N	Se	I	Sil	2.80	2.50	2.12	2.12	.437	.437	.500	.500
20	Buda 4B-153	Tr,Ind	4-3⁷⁄₁₆x4⅛	47-2800	42-2800	153.0	6.00	112-1500 (BE)	W	In	I	2112	1.50	1.28	1.37	1.12	.429	.429	.312	.312
21	4B-182	Tr,Ind	4-3¾x4⅛	54-2800	48-2800	182.0	5.54	140- 800 (BE)	N	In	I	2112	1.50	1.28	1.37	1.12	.429	.429	.312	.312
22	6B-230	Tr,Ind	6-3⁷⁄₁₆x4⅛	72-3000	65-3000	230.0	6.00	168-1000 (BE)	W	In	I	2112	1.50	1.28	1.37	1.12	.429	.429	.312	.312
23	6B-273	Tr,Ind	6-3¾x4⅛	82-2800	75-2800	273.0	5.40	204-1200 (BE)	N	In	I	2112	1.50	1.28	1.37	1.12	.429	.429	.312	.312
24	HP-326	B,Tr,Ind	6-3¹³⁄₁₆x4¾	78-2400	66-2400	326.0	5.40	220-1100 (BE)	N	In	L	2112	1.65	1.53	1.50	1.37	.344	.344	.372	.372
25	HP-351	Tr,Ind	6-3¹³⁄₁₆x5⅛	84-2400	71-2400	351.0	5.83	232- 900 (BE)	N	In	L	2112	1.65	1.53	1.50	1.37	.344	.344	.372	.372
26	K-428	B,Tr,Ind	6-4⅜x4¾	107-2400	95-2400	428.0	5.33	276-1100 (BE)	N	In	L	2112	1.90	1.78	1.75	1.62	.400	.400	.372	.372
27	L-525	Tr,Ind	6-4½x5½	113-2400	94-2400	525.0	4.75	340- 900 (BE)	N	In	L	2112	1.90	1.78	1.75	1.62	.400	.400	.372	.372
28	LO-525	T,B,Tr,Ind	6-4½x5½	157-2400	139-2400	525.0	5.00	400-1200 (BE)	N	In	L	2112	1.96	1.66	1.75	1.50	.468	.468	.372	.372
29	4-MO-645	Tr,Ind	4-5⅝x6½	123-1400	110-1400	645.0	5.43	448- 800 (BE)	W	In	I	2112	2.64	2.02	2.37	1.87	.540	.540	.437	.437
30	6-MO-893	T,Ind,M	6-5⅝x6	190-2000	170-2000	893.0	5.50	670-1000 (BE)	W	In	I	2112	2.64	2.02	2.37	1.87	.540	.540	.437	.437
31	6-MO-970	T,Ind,M	6-5⅝x6½	200-1800	171-1800	970.0	5.43	720- 800 (BE)	W	In	I	2112	2.64	2.02	2.37	1.87	.540	.540	.433	.433
32	8MO-1290	Ind	8-5⅝x6½	293-1800	248-1800	1290.0	5.43	1000-1100 (BE)	W	In	I	CNS	2.45	2.02	2.37	1.87	.540	.540	.433	.433
33	PC-1879	Ind	6-6¾x8¾	232-1000	197-1000	1879.0	4.50	1300- 800 (BE)	W	In	I	2112	2.71	2.53	2.50	2.28	.703	.703	.558	.558
34	PCG-1879	Ind	6-6¾x8¾	232-1000	197-1000	1879.0	......	1300- 800 (BE)	W	In	I	2112	2.71	2.53	2.50	2.28	.703	.703	.558	.558
35	‡PCS-1879	Ind	6-6¾x8¾	340-1200	310-1200	1879.0	......	1540- 950 (BE)	W	In	I	2112	2.71	2.53	2.50	2.28	.703	.703	.558	.558
36	8PC-2505	Ind	8-6¾x8¾	356-1200	320-1200	2505.0	......	1860- 750 (BE)	W	In	I	CNS	2.71	2.53	2.50	2.28	.703	.703	.558	.558
37	‡8PCS-2505	Ind	8-6¾x8¾	465-1200	420-1200	2505.0	......	2110- 950 (BE)	W	In	I	CNS	2.71	2.53	2.50	2.28	.703	.703	.558	.558
38	Buffalo RA-4	M,Ind	4-5⅞x7	120-1200	110-1200	759.0	4.60	825-1200 (EA)	N	Se	I	Sil	3.09	2.84	2.87	2.62	.540	.540	.500	.500
39	RAB-4	M,Ind	4-6½x7	145-1200	130-1200	929.0	5.00	835-1200 (EA)	N	Se	I	Sil	3.09	2.84	2.87	2.62	.625	.540	.500	.500
40	RA-6	M,Ind	6-5⅞x7	180-1200	160-1200	1138.0	4.60	790-1200 (EA)	N	Se	I	Sil	3.09	2.84	2.87	2.62	.540	.540	.500	.500
41	RAB-6	M,Ind	6-6½x7	215-1200	195-1200	1393.0	5.00	955-1200 (EA)	N	Se	I	Sil	3.09	2.84	2.87	2.62	.625	.540	.500	.500
42	RA-8	M,Ind	8-5⅞x7	240-1200	220-1200	1518.0	4.60	1050-1200 (EA)	N	Se	I	Sil	3.09	2.84	2.87	2.62	.540	.540	.500	.500
43	RAB-8	M,Ind	8-6½x7	300-1200	270-1200	1858.0	5.00	1275-1200 (EA)	N	Se	I	Sil	3.09	2.84	2.87	2.62	.625	.540	.500	.500
44	RABV-12	Ind	12-6½x7	430-1200	390-1200	2787.0	5.00	1910-1200 (EA)	W	In	I	Sil	2.46	2.25	2.25	2.00	.437	.437	.437	.437
45	RABV-16	Ind	16-6½x7	570-1200	515-1200	3716.0	5.00	2550-1200 (EA)	W	In	I	Sil	2.46	2.25	2.25	2.00	.437	.437	.437	.437
46	Chevrolet 1950	T,B,C	6-3⁹⁄₁₆x3¹⁵⁄₁₆	105-3600	98-3500	235.5	6.70	193-1100 (EA)	N	In	I	AS	1.94	1.50	1.44	1.25	.294△	.312△	.341	.340
47	1950	COE	6-3⁹⁄₁₆x3¹⁵⁄₁₆	102-3600	95-3500	235.5	6.70	193-1100 (EA)	N	In	I	AS	1.94	1.50	1.44	1.25	.294	.312	.341	.340
48	1950	FC	6-3⁹⁄₁₆x3¹⁵⁄₁₆	92-3400	85-3300	235.5	6.70	....	N	In	I	AS	1.94	1.50	1.44	1.25	.294	.312	.341	.340
49	1950	T,B,C	6-3½x3¾	92-3400	85-3300	216.5	6.60	176-1000 (EA)	N	In	I	AS	1.64	1.50	1.25	1.25	.294	.312	.341	.340
50	Chris-Craft *B	M	4-3¼x4	....	60-3200	132.7	7.50	108-2400 (EA)	N	In	L	2112N	1.48	1.30	1.25	1.12	.312	.312	.310	.310
51	*°K	M	6-3⁷⁄₁₆x4⅛	....	95-3200	229.7	7.35	173-1800 (EA)	N	In	L	2112N	1.61	1.39	1.25	1.25	.311	.311	.310	.310
52	*°KL	M	6-3⁷⁄₁₆x4⅛	....	105-3200	236.6	7.52	190-2200 (EA)	N	In	L	2112N	1.61	1.39	1.25	1.25	.311	.311	.310	.310
53	KBL	M	6-3⁷⁄₁₆x4⅛	....	131-3900	236.6	7.52	191-3000 (EA)	N	In	L	2112N	1.61	1.39	1.25	1.25	.344	.344	.310	.310
54	*°M	M	6-4x4¼	....	130-3000	320.4	7.50	239-2400 (EA)	N	In	L	2112N	1.83	1.68	1.81	1.50	.356	.356	.372	.372
55	*°ML	M	6-4x4½	....	145-3000	339.2	7.90	267-2400 (EA)	N	In	L	Ext	1.83	1.68	1.81	1.50	.356	.356	.372	.372
56	MBL	M	6-4x4½	....	158-3400	339.2	7.90	266-2600 (EA)	N	In	L	Ext	1.83	1.68	1.81	1.50	.387	.387	.372	.372
57	*°W	M	6-4¼x4¾	....	160-3000	404.3	6.40	322-1500 (EA)	N	In	L	2112N	1.92	1.78	1.87	1.68	.388	.388	.372	.372
58	Chrysler M46 Ace	M	6-3¼x4⅜	....	87-2800	217.7	6.60	160-1000 (EA)	N	In	L	Sil	1.53	1.41	1.41	1.28	.375	.375	.340	.340
59	M46 Ace Spec	M	6-3¼x4⅜	....	105-3600	217.7	7.00	182-1600 (EA)	N	In	L	Sil	1.53	1.41	1.41	1.28	.375	.375	.340	.340
60	M47 Crown	M	6-3⁷⁄₁₆x4½	....	104-2800	250.6	6.50	210-1600 (EA)	N	In	L	Sil	1.72	1.53	1.44	1.38	.375	.375	.340	.340
61	M47 Crown Spec	M	6-3⁷⁄₁₆x4½	....	125-3600	250.6	7.00	210-1600 (EA)	N	In	L	Sil	1.72	1.53	1.44	1.38	.375	.375	.340	.340
62	M48 Royal	M	8-3¼x4⅞	....	135-2800	323.5	6.80	268-2000 (EA)	N	In	L	Sil	1.53	1.34	1.41	1.22	.375	.375	.340	.340
63	M48 Royal Spec	M	8-3¼x4⅞	....	165-3600	323.5	7.00	280-2400 (EA)	N	In	L	Sil	1.53	1.34	1.41	1.22	.375	.375	.340	.340
64	M49 Majestic	M	6-4x5	....	160-3000	376.9	6.50	306-1600 (EA)	N	In	L	Sil	1.94	1.75	1.78	1.59	.410	.379	.371	.433
65	Ind. 5	Ind.	6-3¼x4⅜	96-3600	82-3600	217.7	6.60	165-1200 (EA)	N	In	L	XB	1.53	1.41	1.41	1.28	.379	.379	.340	.340
66	Ind. 6	Ind	6-3¼x4⅝	102-3600	83-3200	230.2	6.70	179-1200 (EA)	N	In	L	XB	1.53	1.41	1.41	1.28	.364	.364	.340	.340
67	Ind. 7	Ind	6-3⁷⁄₁₆x4¼	109-3600	91-3200	236.6	6.60	180-1200 (EA)	N	In	L	XCR	1.72	1.50	1.56	1.38	.379	.379	.340	.340
68	Ind. 8	Ind	6-3⁷⁄₁₆x4½	114-3600	98-3200	250.6	6.60	192-1400 (EA)	N	In	L	XB	1.72	1.50	1.56	1.38	.379	.379	.340	.340
69	Ind. 12	Ind	8-3¼x4⅞	130-3400	97-2500	323.5	7.80	219-1600 (EA)	N	In	L	XB	1.53	1.34	1.41	1.22	.375	.375	.340	.340
70	Ind. 13	Ind	6-3⅜x4⅝	122-3200	91-2600	308.5	6.50	202-1200 (EA)	N	In	L	XB	1.94	1.75	1.78	1.59	.410	.410	.371	.433
71	Ind. 14	Ind	6-3¾x5	126-3000	96-2500	331.4	6.46	220-1200 (EA)	N	In	L	XB	1.94	1.75	1.78	1.59	.410	.410	.371	.433
72	Ind. 15	Ind	6-4x5	153-2800	116-2400	376.9	6.50	271-1200 (EA)	N	In	L	XB	1.94	1.75	1.78	1.59	.410	.410	.371	.433
73	Climax R41	Ind	4-6x7	123-1200	112-1200	791.6	4.70	825- 750 (EA)	N	Se	I	Sil	2.50	2.50	2.25	2.25	.500	.500	.562	.562
74	R61	Ind	6-6x7	183-1200	165-1200	1187.4	4.70	802- 700 (EA)	N	Se	I	CNS	2.50	2.53	2.25	2.25	.500	.500	.562	.562
75	R81	Ind	8-6x7	245-1200	221-1200	1583.2	4.70	1065- 750 (EA)	N	Se	I	Sil	2.50	2.50	2.25	2.25	.500	.500	.562	.562
76	V-425	Ind	12-6½x7	425-1200	380-1200	2787.0	4.90	2120- 750	W	Se	I	Sil	2.81	2.68	2.50	2.37	.687	.687	.562	.562
77	V-495	Ind	12-7x7	495-1200	445-1200	3232.0	4.90	2460- 750	W	Se	I	Sil	2.81	2.68	2.50	2.37	.687	.687	.562	.562
78	V-280	Ind	8-6½x7	280-1200	255-1200	1860.0	4.90	1350- 800	W	Se	I	Sil	2.81	2.68	2.50	2.37	.687	.687	.562	.562
79	V-330	Ind	8-7x7	330-1200	295-1200	2155.0	4.90	1570- 800	W	Se	I	Sil	2.81	2.68	2.50	2.37	.687	.687	.562	.562

For abbreviations, see pages 150 and 151

For Directory of the Manufacturers listed above, see page 63.

GASOLINE ENGINES

Valves: Angle (Deg.)	Valves: Seats: Inserts Used?	Valves: Seats: Insert Material (S.A.E. No.)	Camshaft Drive—Type	Pistons: Material	Pistons: Weight with Pins, Rings, Bushings (Oz.)	Pistons: Piston Pin—Diameter and Length (In.)	Number of Rings per Piston	Connecting Rods: Material	Connecting Rods: Center to Center Length (In.)	Connecting Rods: Weight with Bushing and Cap (Oz.)	Crankshaft: Material	Crankshaft: Counter Balance Used	Crankshaft: Crank-Pin: Diameter and Length (In.)	Crankshaft: Main Bearings: Number	Crankshaft: Main Bearings: Diameter and Length (In.): Front	Crankshaft: Main Bearings: Diameter and Length (In.): Rear	Oil Pressure to—	Carburetor: Make	Carburetor: Size	Engine Weight without Carburetor or Ignition (Lb.)	Overall Dimensions (In.): Width	Overall Dimensions (In.): Height	Overall Dimensions (In.): Length	Clutch Housing (S.A.E. Nos.)	Line Number
45	N	......	HG	CI	42	.813x2.87	4	1040	6½	29	1045	N	1.83x1.43	3	2.25x1.62	2.25x1.50	adfg	Zen	⅞	380	16 1/16	31⅝	27	6	1
45	E	TA	HG	Al	40.1	.989x3.50	4	1040	7½	42	1045	N	2.37x1.75	3	2.43x1.93	2.50x1.75	acdfg	Zen	1	520	23	31⅝	33½	4	2
30	E	TA	HG	CI	99	1.31x4.06	6	1045	9½	92	1045	N	2.37x2.37	3	2.50x2.31	2.50x2.75	abcdfg	Zen	1¼	985	26	37½	43¾	..	3
45	E	TA	HG	CI	182	1.50x4.87	4	1040	13	182	1045	N	2.75x3.24	3	3.03x3.50	3.00x4.75	abcdfg	Zen	1½	2020	27	47½	53	1	4
45	E	TA	HG	CI	182	1.50x4.87	4	1040	13	182	1045	N	2.75x3.24	4	3.30x3.50	3.00x4.75	abcdfg	Zen(2)	1½	2810	29⅝	63 1/16	72¼	1	5
45	E	71360	HG	Al	43	1.12x3.43	4	NE8640	10¼	65	CS	Y	2.37x1.44	7	3.25x1.87	3.25x2.00	abcdg	Zen	1¼	1230	27¼	41	48	3	6
45	E	71360	HG	Al	51	1.12x3.68	4	NE8640	10¼	78	CS	Y	2.50x1.53	7	3.25x1.87	3.25x2.87	abcdg	Zen	1½	1385	27½	41½	47	2	7
45	E	71360	HG	Al	57	1.12x3.93	4	NE8640	10¼	78	CS	Y	2.50x1.56	7	3.25x1.87	3.25x2.87	abcdg	Hol	1¾	1385	27½	41½	47	2	8
45	N	......	HG	Al	6	.625x2.00	3	1045	5¾	14	1045	Y	1.31x1.25	3	2.50x1.50	2.50x1.50	abcdg	Zen	⅝	128	12¾	17⅝	18⅝	..	9
45	N	......	HG	Al	6	.625x2.00	3	1045	5¾	14	1045	N	1.31x1.25	3	2.50x1.50	2.50x1.50	abcdg	Zen	[illegible]	165	12¾	17⅝	29	....	10
45	Y	TS	Ch	Al	23	.875x2.75	4	2320	7¾	29	1045	Y	2.08x1.25	4	2.50x1.87	2.50x1.87	acdg	Str	1¼	710	18¾	22	37½	....	11
45	E	TS	Ch	Al	23	.875x2.75	4	2320	7¾	29	1045	Y	2.08x1.25	4	2.50x1.87	2.50x1.75	acdg	Str	1¼	710	18¾	22	48½	....	12
45	N	......	HG	SS	80	1.17x4.00	4	1045	11	64	1045	N	2.50x2.50	3	2.50x4.25	2.50x3.50	abcdg	Str	1¼	800	21	29¾	37½	....	13
45	N	......	HG	SS	72	1.17x4.00	6	1045	11	64	1045	N	2.50x2.50	3	2.50x4.25	2.50x3.50	abcdfg	Str	1¼	950	18	18	53	....	14
45	N	......	HG	SS	64	1.17x3.87	4	CNS	11	65	CNS	N	2.50x2.00	3	2.75x4.50	2.75x3.00	acdg	Str	1½	800	25¾	33¾	49	....	15
45	N	......	HG	SS	64	1.17x3.87	4	AS	......	......	CNS	N	2.50x2.00	3	2.75x1.50	2.75x3.00	abcdfg	Str	1½	800	19¾	24¾	65	....	16
45	N	......	HG	SS	76	1.25x3.87	5	CNS	11	65	CNS	N	2.50x2.00	3	2.75x1.50	2.75x3.00	acdg	Str	1½	875	25¾	33¾	49	....	17
45	N	......	HG	SS	70	1.25x3.87	5	AS	11	65	CNS	N	2.50x2.00	3	2.75x4.50	2.75x4.50	abcdfg	Str	1½	900	19¾	24¾	65	....	18
45	N	......	BG	SS	72	1.37x4.00	6	AS	12	80	CNS	Y	2.62x2.87	7	2.62x5.00	2.63x3.50	abcd	Str	1¾	1480	20	30	74	....	19
45	N	......	HG	CI	......	1.00x2.84	4	CS	7¾	......	1045	N	2.00x1.31	3	2.50x1.25	2.50x1.75	abcdfg	Zen	1	500	18 1/16	26⅞	30 1/16	3	20
45	N	......	HG	CI	......	1.00x3.00	4	CS	7¾	......	1045	N	2.00x1.31	3	2.50x1.25	2.50x1.75	abcdfg	Zen	1¼	520	18 1/16	26⅞	30 1/16	3	21
45	N	......	HG	CI	......	1.00x.....	4	1045	7¾	......	1045	N	2.00x1.31	7	2.50x1.25	2.50x1.75	abcdfg	Zen	1	625	18 1/16	26⅞	38 1/16	3	22
45	N	......	HG	CI	......	1.00x3.09	4	1045	7¾	......	1045	N	2.00x1.31	7	2.50x1.25	2.50x1.75	abcdfg	Zen	1¼	635	18 1/16	26⅞	38 1/16	3	23
45	E	DC	HG	CI	42	1.12x3.25	4	CS	9½	42	CS	N	2.12x1.52	7	3.00x1.50	3.00x2.12	abcdg	Zen	1½	885	25¾	33 1/16	39 [illegible]	3	24
45	E	DC	HG	CI	42	1.12x3.25	4	CS	9½	42	CS	N	2.12x1.62	7	3.00x1.50	3.00x2.12	abcdg	Zen	1½	906	25¾	33 1/16	39 [illegible]	3	25
45	E	DC	HG	Al	88	1.25x3.82	4	CS	9½	88	CS	N	2.37x1.75	7	3.00x1.75	3.00x2.50	abcdg	Zen	1½	906	25¾	30 [illegible]	47 1/16	3	26
45	E	DC	HG	CI	88	1.25x3.81	4	CS	11	88	CS	N	2.37x1.75	7	3.00x1.75	3.00x2.50	abcdg	Zen	1½	950	25¾	33 [illegible]	47 1/16	3	27
30	E	Jad	HG	Al	88	1.25x3.81	5	AS	11	78	CS	N	2.37x1.75	7	3.00x1.75	3.00x2.50	abcdfg	Zen	1¾	1195	27 1/16	38 [illegible]	49¾	3	28
30	E	Jad	HG	CI	152	1.75x4.75	6	1040	12½	171	1045	N	3.25x2.12	5	3.75x3.30	3.75x2.75	abcdfg	Zen	2	1925	30 1/16	48¼	44⅞	0	29
30	E	Jad	HG	CI	152	1.75x4.75	5	1040	12½	171	1045	N	3.25x2.12	7	3.75x3.00	3.75x2.75	abcdfg	Zen	2	2400	28¼	48¼	68½	1	30
30	E	Jad	HG	CI	152	1.75x4.75	5	1040	12½	171	1045	N	3.25x2.12	7	3.75x3.75	3.75x2.75	abcdfg	Zen	2	2400	48¼	56½	68½	1	31
30	E	Jad	HG	CI	152	1.75x4.75	6	1040	12½	171	1045	....	3.25x2.12	9	3.75x2.25	3.75x2.25	abcdefg	Zen	2½	3000	38⅛	54 1/16	83 [illegible]	0	32
45	E	DC	HG	Ala	263	2.75x5.53	6	CS	17¾	430	CS	Y	4.25x3.25	7	4.50x2.68	3.75x3.48	abcdfg	Zen(2)	2	9000	48	46 1/16	88 1/16	00	33
45	E	DC	HG	Ala	263	2.75x5.53	6	CS	17¾	430	CS	Y	4.25x3.25	7	4.50x2.68	3.75x3.48	abcdfg	Ens	2	9000	48	66 1/16	88 1/16	00	34
45	E	DC	HG	Al	263	2.75x5.53	5	1035	17¾	430	1045	N	4.25x3.25	7	4.50x2.68	4.50x3.48	abcdg	Ens	2	......	......	......	......	00	35
45	E	......	HG	Al	263	2.75x5.53	5	1035	17¾	430	1045	....	4.33x3.25	9	4.68x2.68	4.68x2.68	abcdefg	Ens	3½	11200	108¼	47 [illegible]	74 [illegible]	00	36
45	E	......	HG	Al	263	2.75x5.53	5	1035	17¾	430	1045	....	4.33x3.25	9	4.68x2.68	4.68x2.68	abcdefg	Ens	3½	12000	112¾	47 [illegible]	74 [illegible]	00	37
45	E	SA	HG	Al	132	1.50x5.62	5	3135	14	147	3140	Y	3.00x2.37	5	3.75x4.12	3.75x4.50	acdg	Zen	2½	2500	24	46	78	....	38
45	E	SA	HG	Al	154	1.68x6.25	5	3135	14	147	3140	Y	3.00x2.37	5	3.75x4.12	3.75x4.50	acg	Zen	2½	2700	24	46	78	....	39
45	E	SA	HG	Al	132	1.50x5.62	5	3135	14	147	3140	Y	3.00x2.37	7	3.75x4.12	3.75x4.50	acg	Zen(2)	2	3000	24	46	94	....	40
45	E	SA	HG	Al	154	1.68x6.25	5	3135	14	147	3140	Y	3.00x2.37	7	3.75x4.12	3.75x4.50	acg	Zen(2)	2	3200	24	46	94	....	41
45	E	SA	HG	Al	132	1.50x5.62	5	3135	14	147	3140	Y	3.00x2.37	9	3.75x4.12	3.75x4.50	acg	Zen(2)	2½	4000	24	46	111	....	42
45	E	SA	HG	Al	154	1.68x6.25	5	3135	14	147	3140	Y	3.00x2.37	9	3.75x4.12	3.75x4.50	acg	Zen(2)	2½	4300	24	46	111	....	43
45	E	WM	HG	Al	171	2.00x5.87	5	3140	14	173	4140	Y	3.75x2.00	7	4.25x3.25	4.25x3.25	acfg	Zen(3)	2	6200	43	66	[illegible]½	....	44
45	E	WM	HG	Al	171	2.00x5.87	5	3140	14	173	4140	Y	3.75x2.00	9	4.25x3.25	4.25x3.25	acfg	Zen(4)	2	8400	43	66	104	....	45
(h)	N	......	HG	ACI	41.07	.865x3.15	3	DFS	6 [illegible]	31	DFS	Y	2.31x1.44	4	2.69x1.19	2.78x1.63	acdf	R-P	1 [illegible]	500†	20¼	30¼	39½	....	46
(h)	N	......	HG	ACI	41.07	.865x3.15	3	DFS	6 [illegible]	31	DFS	Y	2.31x1.44	4	2.69x1.19	2.78x1.63	acdf	R-P	1 1/16	613	20⅝	30¼	39½	....	47
(h)	N	......	HG	ACI	41.07	.865x3.15	3	DFS	6 [illegible]	31	DFS	Y	2.31x1.44	4	2.69x1.19	2.78x1.63	acdf	R-P	1 [illegible]	604	20⅝	30¼	39½	....	48
(h)	N	......	HG	ACI	37.98	.865x3.15	3	DFS	6 [illegible]	31	DFS	Y	2.31x1.44	4	2.69x1.19	2.78x1.63	acdf	R-P	1 [illegible]	[illegible]	20¼	30¼	39½*	....	49
30	N	......	HG	Alt	21	.750x2.83	3	3140	6 1/16	22	Ste‡	N	1.75x1.12	3	1.98x1.62	1.98x1.37	acr	Zen	1¼	486*	24⅛	21½	31 1/16	....	50
30	N	......	HG	Ala	25	.875x2.92	3	1035	7	29	Ste‡	N	1.98x1.26	7	2.49x1.53	2.49x1.15	acdr	Zen	1⅜	626*	24⅛	24	40	....	51
30	N	......	HG	Alt	26	.875x2.92	3	1035	7	29	Ste‡	N	1.98x1.26	7	2.49x1.53	2.49x1.15	acdr	Zen	1½	626*	25 1/16	24 [illegible]	40	....	52
30	N	......	HG	Alt	26	.875x2.92	3	1035	7	29	Ste‡	N	1.98x1.26	7	2.49x1.53	2.49x1.15	acdr	Zen	1½	626*	24 [illegible]	31 1/16	40	....	53
30	N	......	HG	Ala	36	1.00x3.52	3	1040	8	40	Ste‡	N	1.98x1.50	7	2.49x1.74	2.49x1.15	acr	Zen	1¾	850*	26 1/16	25 1/16	43 1/16	....	54
30	N	......	HG	Ala	40	1.12x3.44	3	1040	8	40	Ste‡	N	1.98x1.50	7	2.49x1.74	2.49x1.15	acr	Zen	2	850*	26 1/16	25 1/16	46 [illegible]	....	55
30	N	......	HG	Ala	40	1.12x3.44	3	1040	8	40	Ste‡	N	1.98x1.50	7	2.49x1.74	2.49x1.15	acr	Zen	2	850*	26 1/16	25 1/16	46 1/16	....	56
30	N	......	HG	Alt	44	1.12x3.70	4	3140	8⅛	62	Ste‡	Y	2.24x1.50	7	2.62x2.21	2.62x1.43	acer	Zen	2	1232*	28⅞	26 1/16	53 1/16	....	57
45	E	CMT	HG	Alt	22.2	.859x2.75	4	MS	7.937	30.1	DFS	....	2.06x1.00	4	2.50x1.88	2.50x1.24	acdg	Zen	1¼	......	22½	25⅛	44 1/16	4	58
45	E	CMT	HG	Alt	22.2	.859x2.75	4	MS	7.937	30.1	DFS	....	2.06x1.00	4	2.50x1.88	2.50x1.24	acdg	Zen	1¼	......	22½	25⅛	44 1/16	4	59
45	E	CMT	HG	Alt	25.0	.859x2.88	4	MS	7.875	32.4	DFS	....	2.12x1.22	4	2.50x1.88	2.50x1.24	acdg	Zen	1½	......	28	26 1/16	46 [illegible]	4	60
45	E	CMT	HG	Alt	25.0	.859x2.88	4	MS	7.875	32.4	DFS	....	2.12x1.22	4	2.50x1.88	2.50x1.24	acdg	Zen	1½	......	28	26 1/16	46 [illegible]	4	61
45	E	CMT	HG	Alt	22.9	.859x2.75	4	MS	9.00	32.0	DFS	....	2.19x1.13	5	2.70x2.09	2.70x1.66	acdg	Zen	1¾	......	25¾	28⅞	63⅞	4	62
45	E	CMT	HG	Alt	22.9	.859x2.75	4	MS	9.00	32.0	DFS	....	2.19x1.13	5	2.70x2.09	2.70x1.66	acdg	Zen	1¾	......	25¾	28⅞	63⅞	4	63
45	Be	Sil*	HG	Alt	39.0	1.13x2.75	4	MS	8.75	52.8	DFS	....	2.31x1.34	7	3.00x2.93	3.00x1.72	acdg	Zen(2)	1½	......	27	30½	[illegible]½	4	64
45	E	Spec	Ch	CI	33.0	.859x2.75	4	MS	7.937	32.6	DFS	....	2.06x1.00	4	2.50x1.88	2.50x1.24	acdg	Car	1½	532	19⅞	35	35½	4	65
45	E	Spec	Ch	Alst	22.2	.859x2.75	4	MS	7.812	30.1	DFS	....	2.06x1.00	4	2.50x1.77	2.50x1.50	acdg	Car	1½	540	19⅞	35 [illegible]	36 [illegible]	4	66
45	E	Spec	Ch	CI	36.8	.859x2.88	4	MS	8.00	36.3	DFS	....	2.12x1.00	4	2.50x1.56	2.50x1.50	acdg	Car	1½	550	21½	33 1/16	37 [illegible]	3-4	67
45	E	Spec	Ch	CI	36.8	.859x2.88	4	MS	7.88	34.6	DFS	....	2.12x1.00	4	2.50x1.56	2.50x1.50	acdg	Car	1½	560	21½	33 1/16	37 [illegible]	3-4	68
45	E	Spec	Ch	Alt	22.9	.850x2.75	4	MS	9.00	32.0	DFS	....	2.19x1.13	5	2.70x1.66	2.50x2.09	acdg	Car	1½	735	22⅛	37 1/16	45 [illegible]	1-3-4	69
45	Be	Sil	HG	Ala	39.0	1.13x3.25	4	MS	8.940	52.8	DFS‡	....	2.31x1.34	7	3.00x1.72	3.00x2.93	acdg	Car	1½	1050	24 1/16	40 [illegible]	47 [illegible]	3	70
45	Be	Sil	HG	Ala	39.0	1.13x3.25	4	MS	8.750	52.8	DFS‡	....	2.31x1.34	7	3.00x1.72	3.00x2.93	acdg	Car	1½	1060	24 1/16	40 [illegible]	47 [illegible]	3	71
45	Be	Sil	HG	Ala	45.3	1.13x3.25	4	MS	8.750	52.8	DFS‡	....	2.31x1.34	7	3.00x1.72	3.00x2.93	acdg	Car	1½	1100	24 1/16	41 1/16	47 [illegible]	3	72
45	E	CI	HG	Al	153	1.49x5.37	4	3135	16	244	4140	N	3.00x3.50	3	3.28x3.81	3.25x4.50	acdfg	Zen	2	2300	31 1/16	49½	57 1/16	1, 0	73
45	E	CI	HG	Al	153	1.49x5.37	4	3135	16	244	4140	Y	3.00x3.50	4	3.25x3.81	3.25x4.50	acdfg	Zen(2)	1¾	3200	29⅛	51½	73 [illegible]	1, 0	74
45	E	CI	HG	Al	153	1.49x5.37	4	3135	16	244	4140	N	3.37x3.18	5	4.00x3.62	4.00x4.50	acdfg	Zen(2)	2	4500	35 1/16	66 [illegible]	97⅛	0	75
45	E	NCI	HG	Al	165	2.00x5.75	5	3135	16	276	4140	N	4.00x5.00	7	4.50x3.75	4.50x5.50	abcdfg	Zen(4)	2	11000	51	65	95	00	76
45	E	NCI	HG	Al	176	2.00x5.75	5	3135	16	270	4140	N	4.00x5.00	7	4.50x3.75	4.50x5.50	abcdfg	Zen(4)	2	11200	51	55	95	00	77
45	E	NCI	HG	Al	165	2.00x5.75	5	3135	16	276	4140	N	4.00x5.00	5	4.50x3.75	4.50x5.50	abcdfg	Zen(2)	2	8200	51	58	72¼	00	78
45	E	NCI	HG	Al	176	2.00x5.75	5	3135	16	276	4140	N	4.00x5.00	5	4.50x3.75	4.50x5.50	abcdfg	Zen(2)	2	8200	51	58	72¼	00	79

For abbreviations, see pages 150 and 151

For Directory of the Manufacturers listed above, see page 63.

AMERICAN GASOLINE

Line Number	Engine Make and Model	Designed for	Number of Cylinders, Bore and Stroke (In.)	Maximum Brake Hp. at Specified R.P.M.: With Bare Engine	Maximum Brake Hp. at Specified R.P.M.: With Standard Accessories	Piston Displacement (Cu. In.)	Compression Ratio	Maximum Torque at R.P.M. (Lb. Ft.) with or without Accessories	Cylinder Liners—Type	Crankcase—Upper Half Integral with Cylinders	Valves: Arrangement	Valves: Exhaust Head Material (S.A.E. No.)	Valves: Max. Head Diameter (In.) Intake	Valves: Max. Head Diameter (In.) Exhaust	Valves: Min. Port Diameter (In.) Intake	Valves: Min. Port Diameter (In.) Exhaust	Valves: Lift (In.) Intake	Valves: Lift (In.) Exhaust	Valves: Stem Diameter (In.) Intake	Valves: Stem Diameter (In.) Exhaust
1	Continental N-62	Ind	4-2 3/8x3 1/2	16-2200	....	62.0	5.40	43-1000 (BE)	N	In	L	XCR	.895	.895	.750	.750	.187	.187	.312	.312
2	Y-69	Ind	4-2 1/2x3 1/2	20-2600	....	68.7	4.90	47-1400 (BE)	N	In	L	Aus	1.20	1.01	1.06	.875	.296	.281	.314	.313
3	Y-4069	Tr	4-2 1/2x3 1/2	27-3000	....	68.7	6.70	51-2000 (BE)	N	In	L	Aus	1.20	1.01	1.06	.875	.296	.281	.314	.313
4	Y-91	Ind	4-2 7/8x3 1/2	28-2600	....	90.9	4.50	67-1400 (BE)	N	In	L	Aus	1.20	1.01	1.06	.875	.296	.281	.314	.313
5	Y-4091	C,Tr	4-2 7/8x3 1/2	35-3000	....	90.9	6.10	70-1600 (BE)	N	In	L	Aus	1.20	1.01	1.06	.875	.296	.281	.314	.313
6	Y-112	Ind	4-3 3/16x3 1/2	31-2600	....	111.7	5.90	81-1400 (BE)	N	In	L	Aus	1.20	1.01	1.06	.875	.296	.281	.314	.313
7	Y-4112	C,Tr	4-3 3/16x3 1/2	45-3000	....	111.7	6.10	86-2200 (BE)	....	In	L	Aus	1.20	1.01	1.06	.875	.296	.281	.314	.313
8	F-124	Ind	4-3x4 3/8	36-2400	....	123.7	4.10	91-1200 (BE)	N	....	L	Aus	1.51	1.32	1.37	1.18	.281	.281	.341	.334
9	F-4124	C,T,Tr	4-3x4 3/8	46-3000	....	123.7	6.50	86-1400 (BE)	N	In	L	Aus	1.51	1.32	1.37	1.18	.281	.281	.341	.336
10	G-134	Ind	4-3 1/8x4 3/8	33-2400	....	134.0	4.80	104-1000 (BE)	W	....	I	XCR	1.32	1.20	1.18	1.09	.312	.312	.343	.349
11	F-140	Ind	4-3 3/16x4 3/8	42-2400	....	139.6	4.40	104-1200 (BE)	N	In	L	Aus	1.51	1.32	1.37	1.18	.281	.281	.341	.333
12	F-4140	C,T,Tr	4-3 3/16x4 3/8	52-3000	....	139.6	6.30	108-1400 (BE)	N	In	L	Aus	1.51	1.32	1.37	1.18	.281	.281	.341	.339
13	G-157	Ind	4-3 3/8x4 3/8	39-2400	....	157.0	4.80	121-1000 (BE)	W	....	I	XCR	1.32	1.20	1.18	1.09	.312	.312	.343	.349
14	F-162	Ind	4-3 7/16x4 3/8	43-2400	....	162.4	5.00	124- 800 (BE)	N	In	L	Aus	1.51	1.32	1.37	1.18	.281	.281	.341	.333
15	F-4162	C,T,Tr	4-3 7/16x4 3/8	56-3000	....	162.4	6.10	122-1600 (BE)	N	In	L	Aus	1.51	1.32	1.37	1.18	.281	.281	.341	.339
16	H-227	Ind	4-3 5/8x5 1/2	54-2000	....	227.0	4.70	174-1000 (BE)	W	In	I	XCR	1.64	1.45	1.50	1.31	.343	.343	.437	.439
17	H-243	Ind	4-3 3/4x5 1/2	56-2000	....	243.0	4.70	186-1000 (BE)	W	In	I	XCR	1.64	1.45	1.50	1.31	.343	.343	.437	.437
18	F-186	Ind	6-3x4 3/8	54-2400	....	185.6	4.20	140-1000 (BE)	N	In	L	Aus	1.51	1.32	1.37	1.18	.296	.296	.341	.337
19	F-6186	C,T,Tr	6-3x4 3/8	59-3000	....	185.6	6.40	139-1000 (BE)	N	In	L	Aus	1.51	1.32	1.37	1.18	.296	.281	.341	.339
20	F-209	Ind	6-3 3/16x4 3/8	61-2400	....	209.4	4.70	155-1000 (BE)	N	In	L	Aus	1.51	1.32	1.37	1.18	.296	.296	.341	.339
21	F-6209	C,T,Tr	6-3 3/16x4 3/8	70-3000	....	209.4	6.10	153-1200 (BE)	N	In	L	Aus	1.51	1.32	1.37	1.18	.296	.281	.341	.339
22	F-226	Ind	6-3 5/16x4 3/8	65-2400	....	226.0	4.90	169-1000 (BE)	N	In	L	Aus	1.51	1.32	1.37	1.18	.296	.296	.341	.339
23	F-6226	C,T,Tr	6-3 5/16x4 3/8	72-3000	....	226.0	6.00	168-1000 (BE)	N	In	L	Aus	1.51	1.32	1.37	1.18	.296	.281	.341	.339
24	M-271	Ind	6-3 5/8x4 3/8	76-2200	....	270.9	4.20	198-1200 (BE)	N	In	L	Aus	1.76	1.51	1.62	1.37	.343	.359	.404	.409
25	M-6271	T,B,Tr	6-3 5/8x4 3/8	88-2800	....	270.9	6.00	203-1200 (BE)	N	In	L	Aus	1.76	1.51	1.62	1.37	.343	.359	.404	.402
26	M-290	Ind	6-3 3/4x4 3/8	81-2200	....	289.9	4.40	212-1200 (BE)	N	In	L	Aus	1.76	1.51	1.62	1.37	.343	.359	.404	.402
27	M-6290	T,B,Tr	6-3 3/4x4 3/8	93-2800	....	289.9	6.00	217-1000 (BE)	N	In	L	Aus	1.76	1.51	1.62	1.37	.343	.359	.404	.402
28	M-330	Ind	6-4x4 3/8	89-2200	....	329.9	4.80	248-1000 (BE)	N	In	L	Aus	1.76	1.51	1.62	1.37	.343	.343	.404	.402
29	M-6330	T,B,Tr	6-4x4 3/8	104-2800	....	329.4	6.10	245-1000 (BE)	N	In	L	Aus	1.76	1.51	1.62	1.37	.343	.359	.404	.402
30	B-371	Ind	6-4 1/8x4 5/8	97-2200	....	370.9	5.20	277-1000 (BE)	N	In	L	Aus	1.89	1.64	1.75	1.50	.359	.359	.435	.432
31	B-6371	T,B	6-4 1/8x4 5/8	100-2600	....	370.9	6.00	278-1000 (BE)	N	In	L	Aus	1.89	1.64	1.75	1.50	.359	.359	.435	.432
32	T-6371	....	6-4 1/8x4 5/8	126-2600	....	370.9	5.78	294-1000 (BE)	N	....	I	Aus	2.01	1.64	1.75	1.50	.375	.375	.437	.432
33	B-427	Ind	6-4 5/16x4 7/8	112-2200	....	427.1	5.80	322- 800 (BE)	N	In	L	Aus	1.89	1.64	1.75	1.50	.359	.359	.435	.437
34	B-6427	T,B,M	6-4 5/16x4 7/8	127-2600	....	427.2	5.90	323-1200 (BE)	N	In	L	Aus	1.89	1.64	1.75	1.50	.359	.359	.435	.432
35	T-6427	....	6-4 5/16x4 7/8	146-2600	....	427.2	5.85	338-1000 (BE)	N	....	I	Aus	2.01	1.64	1.75	1.50	.375	.375	.437	.432
36	U-6501	T,B,Ind	6-4 1/2x5 1/4	170-2400	....	501.0	5.90	390-2400 (BE)	N	In	L	Sil	2.14	1.87	2.00	1.63	.374	.374	.435	.432
37	R-513	Ind	6-4 1/2x5 3/8	140-2000	....	512.9	5.10	393-1000 (BE)	N	In	I	Aus	2.14	1.89	2.00	1.75	.500	.500	.500	.493
38	R-6513	T,B	6-4 1/2x5 3/8	170-2600	....	512.9	5.90	400-1200 (BE)	N	In	I	Aus	2.14	1.89	1.81	1.75	.500	.500	.500	.495
39	R-572	Ind	6-4 3/4x5 3/8	156-2000	....	571.7	5.50	440-1000 (BE)	N	In	I	Aus	2.14	1.89	2.00	1.75	.500	.500	.500	.495
40	R-6572	T,B	6-4 3/4x5 3/8	189-2600	....	571.7	5.90	440-1200 (BE)	N	In	I	Aus	2.09	1.89	2.00	1.75	.500	.500	.500	.495
41	R-602	Ind	6-4 7/8x5 3/8	164-2000	....	602.0	5.80	460-1000 (BE)	N	In	I	Aus	2.14	1.89	2.00	1.75	.500	.500	.500	.495
42	R-6602	T,B	6-4 7/8x5 3/8	190-2600	....	602.0	5.80	464-1200 (BE)	N	In	I	Aus	2.14	1.89	2.00	1.75	.500	.500	.500	.495
43	S-749	Ind	6-5 3/8x5 1/2	217-2200	....	748.8	6.10	572-1000 (BE)	N	....	I	Aus	2.39	2.14	2.25	2.00	.562	.562	.497	.495
44	S-6749	....	6-5 3/8x5 1/2	247-2600	....	748.8	6.10	576-1400 (BE)	N	....	I	Aus	2.39	2.14	2.25	2.00	.562	.562	.497	.494
45	Dodge T-142, T-144	T	6-3 1/4x4 3/8	96-3600	82-3600	217.8	6.60	172-1200 (BE)	N	In	L	Sil	1.53	1.41	1.41	1.28	.379	.379	.340	.340
46	T-146	T	6-3 1/4x4 5/8	102-3600	83-3200	230.2	6.70	187-1200 (BE)	N	In	L	Sil	1.53	1.41	1.41	1.28	.364	.334	.340	.340
47	T-164, T-165	T	6-3 1/4x4 5/8	94-3200	83-3200	230.2	6.70	186-1200 (BE)	N	In	L	Sil	1.53	1.41	1.41	1.28	.364	.364	.340	.340
48	T-137	T	6-3 1/4x4 5/8	94-3200	78-3200	230.2	6.70	186-1200 (BE)	N	In	L	Sil	1.53	1.41	1.41	1.28	.354	.354	.340	.340
49	T-148, TX-148, T-152, TX-152	T	6-3 7/16x4 1/4	109-3600	91-3200	236.6	6.60	192-1200 (BE)	N	In	L	Sil	1.72	1.50	1.56	1.37	.379	.379	.340	.340
50	T-150, TX-150, T-154, TX-154	T	6-3 7/16x4 1/2	114-3600	98-3200	250.6	6.60	204-1200 (BE)	N	In	L	Sil(x)	1.72	1.50	1.56	1.37	.379	.379	.340	.430
51	T-156	T	6-3 3/4x4 5/8	122-3200	106-3200	306.0	6.46	245-1200 (BE)	N	In	L	Sil(x)	1.94	1.75	1.78	1.59	.410	.379	.371	.430
52	T-158, TX-158	T	6-3 3/4x5	128-3000	111-2800	331.3	6.46	270-1200 (BE)	N	In	L	Sil(x)	1.94	1.75	1.78	1.59	.410	.379	.371	.430
53	Ford 8MB	B	6-3 1/2x4.4	104-3000	86-3000	254.0	6.8	212-1200 (BE)	N	In	L	Nic	1.65	1.51	1.46	1.34	.350	.350	.341	.341
54	7HT	T	6-3.3x4.4	95-3300	87-3100	226.0	6.8	180-1200 (BE)	N	In	L	Nic	1.65	1.51	1.46	1.34	.350	.350	.341	.341
55	8RT	T	8-3 3/16x3 3/4	100-3800	90-3300	239.0	6.8	180-2000 (BE)	N	In	L	Nic	1.51	1.51	1.34	1.34	.307	.307	.341	.341
56	8EQ	T	8-3 1/2x4 3/8	145-3600	127-3300	337.0	6.4	255-1800 (BE)	N	In	L	Nic	1.80	1.51	1.57	1.35	.360	.380	.341	.341
57	8NNN-120	M,I	4-3 3/16x3 3/4	38-2400	36-2400	119.7	6.2	93-1500 (BE)	D	In	L	CNS	1.51	1.28	1.46	1.24	.307	.307	.310	.310
58	7HNN-226	M,I	6-3.3x4.4	80-2400	77-2400	226.0	6.8	183-1500 (BE)	N	In	L	CNS	1.65	1.51	1.46	1.34	.335	.335	.341	.341
59	8MNN-254	M,I	6-3.5x4.4	95-2400	92-2400	254.0	6.8	216-1600 (BE)	N	In	L	CNS	1.65	1.51	1.46	1.34	.335	.335	.341	.341
60	8RNN-239	M,I	8-3 3/16x3 3/4	94-2800	91-2800	239.0	6.8	168-1900 (BE)	N	In	L	CNS	1.51	1.51	1.34	1.34	.292	.292	.341	.341
61	8ENN-337	M,I	8-3 1/2x4 3/8	117-2400	112-2400	337.0	6.4	259-2000 (BE)	N	In	L	HFA	1.80	1.51	1.57	1.35	.357	.340	.341	.341
62	8MTH	T	6-3 1/2x4.4	110-3400	100-3150	254.0	6.80	212-1200 (BE)	N	In	L	Nic	1.65	1.51	1.46	1.34	.350	.350	.341	.341
63	Franklin 4CHO-150	T,Tr,Ind	4-3 5/8x3 5/8	50-3000	43-3000	150.0	6.00	100-1200 (BE)	D	Se	I	......	1.66	1.51	1.50	1.40	.375	.375	.375	.375
64	G. M. C. 228	T	6-3 9/16x3 13/16	96-3200	86-3200	228.0	6.75	170-1200 (BE)	N	In	I	Sil	1.64	1.46	1.31	1.16	.395	.380	.341	.340
65	248	T	6-3 23/32x3 13/16	110-3600	95-3200	248.5	6.75	95-1000 (BE)	N	In	I	Aus	1.64	1.41	1.31	1.16	.395	.380	.341	.340
66	270	T	6-3 25/32x4	120-3600	103-3200	269.5	6.75	212-1600 (BE)	N	In	I	Aus	1.64	1.86	1.41	1.56	.395	.380	.341	.340
67	308	T	6-3 13/16x4 1/2	136-3400	113-3200	308.2	6.50	245- 800 (BE)	N	Se	I	Aus	2.00	1.56	1.63	1.37	.403	.386	.372	.372
68	360	T	6-4 1/8x4 1/2	150-3200	127-3000	360.8	6.50	209- 800 (BE)	N	Se	I	Sil	2.00	1.56	1.63	1.37	.403	.396	.372	.434
69	426	T	6-4 1/4x5	177-3200	149-3000	425.6	6.50	337- 900 (BE)	N	Se	I	Sil	2.09	1.89	1.75	1.50	.462	.461	.372	.434
70	503	T,B	6-4 7/16x5 7/16	190-3000	165-2800	502.7	6.50	415- 900 (BE)	N	Se	I	Sil	2.09	1.89	1.75	1.50	.462	.461	.372	.434
71	Gray Marine Light Four-69	M	4-2 1/2x3 1/2	....	16-1800	69	6.07	476-1400 (EA)	N	In	L	Sil	1.20	1.02	1.06	.875	.284	.284	.314	.313
72	Sea Scout-91	M	4-2 7/8x3 1/2	....	25-2000	91	7.45	....	N	In	L	Sil	1.20	1.02	1.06	.875	.284	.284	.314	.313
73	Lugger 4-112	M	4-3 3/16x3 1/2	....	30-2000	112.0	6.00	....	N	In	L	Sil	1.20	1.02	1.06	.800	.284	.284	.313	.313
74	Lugger 4-162	M	4-3 7/16x4 3/8	....	42-1800	162	6.00	....	N	In	L	Sil	1.51	1.33	1.37	1.18	.331	.331	.340	.361
75	Lugger 6-226	M	6-3 5/16x4 3/8	....	73-2400	226	6.75	....	N	In	L	Sil	1.51	1.33	1.37	1.18	.284	.284	.340	.340
76	Lugger 6-244	M	6-3 7/16x4 3/8	....	83-2400	244	6.22	....	N	In	L	Sil	1.70	1.42	1.56	1.31	.311	.311	.339	.338
77	Lugger 6-330	M	6-4x4 3/8	....	96-2400	330	6.00	....	N	In	L	Sil	1.76	1.51	1.62	1.37	.339	.339	.404	.401
78	Express 4-140	M	4-3 3/16x4 3/8	....	56-3000	140.0	6.20	....	N	In	L	Sil	1.51	1.33	....	....	.330	.330	.341	.339
79	Express 4-162	M	4-3 7/16x4 3/8	....	63-3000	162	7.00	....	N	In	L	Sil	1.51	1.33	1.37	1.18	.331	.331	.340	.330
80	Express 6-226	M	6-3 5/16x4 3/8	....	93-3200	226	6.75	....	N	In	L	Sil	1.51	1.33	1.37	1.18	.311	.311	.340	.342
81	Express 6-244	M	6-3 7/16x4 3/8	....	102-3200	244	7.60	....	N	In	L	Sil	1.70	1.42	1.56	1.31	.357	.357	.339	.332
82	Express 6-330	M	6-4x4 3/8	....	124-3200	330	7.25	....	N	In	L	Sil	1.76	1.51	1.62	1.37	.354	.354	.404	.401
83	Express 6-427	M	6-4 5/16x4 7/8	....	150-3200	427	6.73	....	N	In	L	Sil	1.89	1.64	1.75	1.5	.359	.359	.434	.438
84	Super 6-330	M	6-4x4 3/8	....	155-3400	330	7.25	....	N	In	L	Sil	1.80	1.51	1.62	1.37	.354	.354	.404	.401
85	Super 6-427	M	6-4 5/16x4 7/8	....	175-3200	427	7.50	....	N	In	L	Sil	2.16	1.77	2.02	1.63	.359	.359	.434	.431
86	Phantom 4-45	M	4-2 7/8x3 1/2	....	45-3600	91	7.45	....	N	In	L	Sil	1.20	1.02	1.06	.875	.284	.284	.314	.314
87	Phantom 4-62	M	4-3 3/16x4 3/8	....	62-3600	140.0	7.05	....	N	In	L	Sil	1.51	1.33	....	....	.330	.330	.341	.339
88	Phantom 4-75	M	4-3 7/16x4 3/8	....	75-3600	162	8.00	....	N	In	L	Sil	1.64	1.45	1.37	1.18	.331	.331	.340	.313
89	Phantom 6-112	M	6-3 5/16x4 3/8	....	112-3600	226	8.00	....	N	In	L	Sil	1.51	1.33	1.37	1.18	.311	.311	.340	.339

For abbreviations, see pages 150 and 151

For Directory of the Manufacturers listed above, see page 63.

ENGINES—Continued

VALVES: Angle (Deg.)	VALVES: Seats: Inserts Used?	VALVES: Seats: Insert Material (S.A.E. No.)	Camshaft Drive—Type	PISTONS: Material	PISTONS: Weight with Pins, Rings, Bushings (Oz.)	PISTONS: Piston Pin—Diameter and Length (In.)	Number of Rings per Piston	CONNECTING RODS: Material	CONNECTING RODS: Center to Center Length (In.)	CONNECTING RODS: Weight with Bushing and Cap (Oz.)	CRANKSHAFT: Material	CRANKSHAFT: Counter Balance Used	CRANKSHAFT: Crank-Pin: Diameter and Length (In.)	CRANKSHAFT: Main Bearings: Number	CRANKSHAFT: Main Bearings: Diameter and Length (In.): Front	CRANKSHAFT: Main Bearings: Diameter and Length (In.): Rear	Oil Pressure to—	CARBURETOR: Make	CARBURETOR: Size	Engine Weight without Carburetor or Ignition (Lb.)	OVERALL DIMENSIONS (In.): Width	OVERALL DIMENSIONS (In.): Height	OVERALL DIMENSIONS (In.): Length	Clutch Housing (S.A.E. Nos.)	Line Number
(h)	N	......	......	CI	......	.546x1.90	3	1035	5¾	......	DFS	N	......	...	2.00x	2.00x1.25	......	......	⅞	170	16	19	19	6	1
(h)	N	......	HG	CI	......	.703x2.06	3	1030	5¾	......	DFS	N	1.50x1.18	3	1.75x1.37	1.75x1.78	acdgt	......	1	265	26	22 11/16	25½	5	2
(h)	N	......	HG	CI	......	.703x2.06	3	1030	5¾	......	DFS	N	1.50x1.18	3	1.75x1.37	1.75x1.78	acdgt	......	1	290	26	22 11/16	25½	5	3
(h)	N	......	HG	CI	......	.703x2.44	3	1030	5¾	......	DFS	N	1.50x1.18	3	1.75x1.37	1.75x1.78	acdgt	......	1	265	26	22 11/16	25½	5	4
(h)	N	......	HG	CI	......	.703x2.44	3	1030	5¾	......	DFS	N	1.50x1.18	3	1.75x1.37	1.75x1.78	acdgt	......	1	290	26	22 11/16	25½	5	5
(h)	N	......	HG	CI	......	.703x2.75	3	1030	5¾	......	DFS	N	1.50x1.18	3	1.75x1.28	1.75x1.65	acdgt	......	1	265	26	22 11/16	25½	5	6
(h)	N	......	HG	CI	......	.703x2.75	3	1030	5¾	......	DFS	N	1.50x1.18	3	1.75x1.28	1.75x1.65	acdgt	......	1	290	26	22 11/16	25½	6	7
(h)	N	......	HG	CI	......	.859x2.50	4	1030	7	......	DFS	N	1.93x1.31	3	2.25x1.18	2.25x1.89	acdgt	......	1	370	26	26 11/16	26 1/16	4	8
(h)	N	......	HG	CI	......	.859x2.50	4	1030	7	......	DFS	N	1.93x1.31	3	2.25x1.18	2.25x1.89	acdgt	......	1¼	395	26	26 11/16	29 1/16	4, 3	9
(h)	N	......	HG	Al	......	1.12x2.56	4	1035	7	......	DFS	N	......	3	2.37x2.53	2.37x1.66	......	......	1	475	16 13/16	19 11/16	26 13/16	......	10
(h)	N	......	HG	CI	......	.859x2.68	4	1030	7	......	DFS	N	1.93x1.31	3	2.25x1.18	2.25x1.89	acdgt	......	1	370	26	26 11/16	29 1/16	4	11
(h)	N	......	HG	CI	......	.859x2.68	4	1030	7	......	DFS	N	1.93x1.31	3	2.25x1.18	2.25x1.89	acdgt	......	1¼	395	26	26 11/16	29 1/16	4	12
(h)	N	......	HG	Al	......	1.12x2.75	4	1035	7	......	DFS	N	......	3	2.37x1.53	2.37x1.66	......	......	1	475	16 13/16	19 11/16	26 13/16	4, 3	13
(h)	N	......	HG	CI	......	.859x2.87	4	1030	7	......	DFS	N	1.93x1.31	3	2.25x1.18	2.25x1.89	acdgt	......	1	370	26	26 11/16	29 1/16	6	14
(h)	N	......	HG	CI	......	.859x2.87	4	1030	7	......	DFS	N	1.93x1.31	3	2.25x1.18	2.25x1.89	acdgt	......	1¼	395	26	26 11/16	29 1/16	4, 3	15
(h)	E	SA	......	Ala	......	1.25x3.31	4	1035	9½	......	DFS	N	2.50x1.18	3	2.87x1.81	2.87x2.06	acdg	......	1¼	645	19¾	33 11/16	30½	......	16
(h)	E	SA	......	......	......	1.25x3.18	4	1035	9½	......	DFS	N	2.50x1.18	3	2.87x1.81	2.87x2.06	acdg	......	1¼	654	19¾	33 11/16	30½	......	17
(h)	N	......	HG	CI	......	.859x2.50	4	1030	7	......	DFS	N	1.93x1.31	4	2.25x1.18	2.25x1.81	acdgt	......	1¼	505	26	27¼	36 11/16	4	18
(h)	N	......	HG	CI	......	.859x2.50	4	1030	7	......	DFS	Y	1.93x1.31	4	2.25x1.18	2.25x1.81	acdgt	......	1¼	515	26	27¼	36 11/16	4, 3	19
(h)	N	......	HG	CI	......	.859x2.62	4	1030	7	......	DFS	N	1.93x1.31	4	2.25x1.18	2.25x1.81	acdgt	......	1¼	505	26	27¼	36 11/16	4	20
(h)	N	......	HG	CI	......	.859x2.62	4	1030	7	......	DFS	Y	1.93x1.31	4	2.25x1.18	2.25x1.81	acdgt	......	1¼	515	26	27¼	36 11/16	4, 3	21
(h)	N	......	HG	CI	......	.859x2.62	4	1030	7	......	DFS	Y	2.06x1.31	4	2.37x1.28	2.37x1.73	acdgt	......	1¼	510	26	27¼	36 11/16	4	22
(h)	N	......	HG	CI	......	.859x2.62	4	1030	7	......	DFS	Y	2.06x1.31	4	2.37x1.28	2.37x1.81	acdgt	......	1¼	515	26	27¼	36 11/16	4, 3	23
(h)	E	......	HG	CI	......	1.10x3.06	5	1035	8⅝	......	DFS	Y	2.25x1.56	7	2.62x1.50	2.62x2.18	acdgt	......	1¼	720	25¾	29½	42	3	24
(h)	E	SA	HG	CI	......	1.10x3.06	5	1035	8⅝	......	DFS	Y	2.25x1.56	7	2.62x1.50	2.62x2.18	acdgt	......	1½	755	25¾	29½	42	4, 3	25
(h)	E	......	HG	CI	......	1.10x3.18	5	1035	8⅝	......	DFS	Y	2.25x1.56	7	2.62x1.50	2.62x2.18	acdgt	......	1¼	720	25¾	29½	42	3	26
(h)	E	SA	HG	CI	......	1.10x3.18	5	1035	8⅝	......	DFS	Y	2.25x1.56	7	2.62x1.50	2.62x2.18	acdgt	......	1½	755	25¾	29½	42	4, 3	27
(h)	E	......	HG	CI	......	1.10x3.43	5	1035	8⅝	......	DFS	Y	2.25x1.56	7	2.62x1.50	2.62x2.18	acdgt	......	1¼	720	25¾	29½	42	3	28
(h)	E	SA	HG	CI	......	1.10x3.43	5	1035	8⅝	......	DFS	Y	2.25x1.56	7	2.62x1.50	2.62x2.18	acdgt	......	1½	755	25¾	29½	42	4, 3	29
(h)	E	......	HG	Ala	......	1.25x3.43	5	1035	8⅝	......	DFS	Y	2.50x1.00	7	2.87x1.65	2.87x2.62	acdgt	......	1½	870	26	29¼	43 11/16	2	30
(h)	E	SA	HG	Ala	......	1.25x3.43	5	1035	8⅝	......	DFS	Y	2.50x1.00	7	2.87x1.65	2.87x2.71	acdgt	......	2	870	26	29¼	43 11/16	3, 2	31
(h)	E	SA	......	......	......	1.25x3.37	5	1035	8⅝	......	DFS	Y	......	7	2.87x1.65	2.87x2.71	acdg	......	1¾	1070	24½	31⅝	45 11/16	......	32
(h)	E	......	HG	Ala	......	1.25x3.43	5	1035	8⅝	......	DFS	Y	2.50x1.00	7	2.87x1.65	2.87x2.62	acdfgt	......	1½	875	26	29¼	43 11/16	2	33
(h)	E	SA	HG	Ala	......	1.25x3.43	5	1035	8⅝	......	DFS	Y	2.50x1.00	7	2.87x1.65	2.87x2.71	acdfgt	......	2	875	26	29¼	43 11/16	3, 2	34
(h)	E	SA	......	Ala	......	1.25x3.62	5	1035	8⅝	......	DFS	Y	......	7	2.87x1.65	2.87x2.71	acdg	......	1¾	1076	24½	31⅝	45 11/16	......	35
(z)	E	SA	HG	Al	......	1.50x3.72	5	1035	10½	......	DFS	....	......	7	2.75x1.75	2.75x2.81	acfg	......	......	......	26½	37 11/16	47 1/16	2	36
(h)	E	......	HG	Ala	......	1.50x3.72	5	1035	10½	......	DFS	Y	3.00x1.94	7	3.25x1.75	3.25x2.75	acdfgt	......	2	1550	......	......	......	1	37
(h)	E	SA	HG	Al	......	1.50x3.72	5	1035	10½	......	DFS‡	Y	3.00x1.94	7	3.25x1.75	3.25x2.75	abcefg	......	2	1525	......	......	......	2	38
(h)	E	......	HG	Ala	......	1.50x3.72	5	1035	10½	......	DFS	Y	3.00x1.94	7	3.25x1.75	3.25x2.75	acdfgt	......	2	1550	......	......	......	1	39
(h)	E	SA	HG	......	......	1.50x3.72	5	1035	10½	......	DFS‡	Y	3.00x1.94	7	3.25x1.75	3.25x2.75	acdfg	......	2	1525	......	......	......	2	40
(h)	E	SA	HG	Ala	......	1.50x3.72	5	1035	10½	......	DFS	Y	3.00x1.94	7	3.25x1.75	3.25x2.75	acdfg	......	2	1550	......	......	......	1	41
(h)	E	SA	HG	Al	......	1.50x3.72	5	1035	10½	......	DFS‡	Y	3.00x1.94	7	3.25x1.75	3.25x2.75	acdfgt	......	2	1525	......	......	......	2	42
(h)	E	SA	......	Alt	......	1.75x4.53	5	8640	10½	......	DFS	Y	......	7	3.75x1.12	3.75x3.62	acdg	......	2(2)	......	31 11/16	47 1/16	57 1/16	0	43
(h)	E	SA	......	Alt	......	1.75x4.53	5	8640	10½	......	DFS‡	Y	......	7	3.75x1.87	3.75x3.12	acdg	......	2(2)	1085	31 11/16	47 1/16	57 1/16	1	44
45	E	SA	Ch	Al	......	.86x2.75	4	MS	7 11/16	......	CS	Y	2.06x1.00	4	2.50x1.17	2.50x1.59	acdg	Car	1½	500	23¾	35 1/16	35¼	......	45
45	E	SA	Ch	Al	......	.86x2.75	4	MS	7 11/16	......	CS	Y	2.06x1.00	4	2.50x1.17	2.50x1.59	acdg	Str	1½	525	23¾	35 1/16	35¼	......	46
45	E	SA	Ch	Al	......	.86x2.75	4	MS	7 11/16	......	CS	Y	2.06x1.00	4	2.50x1.17	2.50x1.59	acdg	Str	1½	540	23¾	35 1/16	35¼	......	47
45	E	SA	Ch	Al	......	.86x2.75	4	MS	7 11/16	......	CS	Y	2.06x1.00	4	2.50x1.17	2.50x1.59	acdg	Car	1½	570	24⅞	37¾	37¾	......	48
45	E	SA	Ch	Al	......	.86x2.87	4	MS	8	......	CS	Y	2.12x1.09	4	2.50x1.15	2.50x1.59	acdg	Car	1½	575	23¾	35¼	39 11/16	......	49
45	E	SA	Ch	Al	......	.86x2.87	4	MS	7⅞	......	CS	Y	2.12x1.09	4	2.50x1.15	2.50x1.59	acdg	Car	1½	590	23¾	35¼	39 11/16	......	50
45	Be	Sil	HG	Al	......	1.12x3.25	4	MS	8 11/16	......	CS	Y	2.31x1.34	7	3.00x1.71	3.00x2.93	acdg	Car	1½	650	28 1/16	38 1/16	40 11/16	......	51
45	Be	Sil	HG	Al	......	1.12x3.25	4	MS	8¾	......	CS	Y	2.31x1.34	7	3.00x1.71	3.00x2.93	acdg	Car	1½	650	28 1/16	38 1/16	40 11/16	......	52
45	E	MCS	HG	Alst	26	.850x2.91	3	MS	8.25	31	CAS	Y	2.30x1.4	4	2.87x1.14	2.87x1.56	acd	Hol	1½	539	28	31¼	35⅝	......	53
45	E	MCS	HG	Alst	21	.850x2.91	4	MS	8.25	29	CAS	Y	2.30x1.4	4	2.87x1.14	2.87x1.56	acd	Hol	1⅝	500	24 1/16	37⅝	39¾	......	54
45	Y	MCS	HG	Alst	19	.750x2.84	4	MS	7.0	19	CAS	Y	2.14x1.75	3	2.50x1.50	2.50x2.28	acd	Hol	1	534	23	36⅛	32⅞	......	55
45	E	MCS	HG	Alst	26	.850x3.12	4	MS	8.06	20	DFS	Y	2.40x2.25	3	2.87x1.34	2.87x2.40	acd	Hol	1¼	780	27¾	40	34⅞	......	56
45	Be	MCS	HG	Alst	16	.750x2.85	3	CMS	7	20.6	CAS	Y	2.08x1.12	3	2.28x1.60	2.28x1.60	acdg	MaS	⅞	340	20.6	26.2	29.4	5	57
45	E	MCS	HG	Alst	17	.850x2.92	4	CMS	8¼	29	CAS	Y	2.30x1.20	4	2.87x1.14	2.87x1.37	acdg	Hol	1¼	555	21	30.2	37.8	3, 4	58
45	E	MCS	HG	Alst	20	.850x2.92	4	CMS	8¼	29	CAS	Y	2.30x1.20	4	2.87x1.14	2.87x1.37	acdg	Hol	1¼	665	21	30.2	37.8	3, 4	59
45	Be	MCS	HG	Alst	13½	.750x2.85	4	CMS	7	19	CAS	Y	2.14x1.75	3	2.50x1.50	2.50x1.97	acdg	Hol‡	1	570	22.8	30.6	32.8	3, 4	60
45	E	MCS	HG	Alst	28	.850x3.12	4	CMS	8 1/16	27	DFS	Y	2.40x2.25	3	2.86x1.35	2.86x2.20	acdg	Hol‡	1¼	860	27.7	39.1	40.7	3	61
45	E	MCS	HG	Al	26	.850x2.91	3	MS	8.25	31	CAS	Y	2.30x1.40	4	2.87x1.14	2.87x1.56	acd	Hol	1½	823	24 11/16	37	39⅝	......	62
30	Y	Nir	HG	Al	18	.859x3.12	4	1040	7	74	1045	Y	1.93x1.00	3	2.25x1.22	2.25x1.80	ac	Op	1⅛	##	34	18½	18	4	63
30	N	......	HG	Al	37.5	.990x3.00	4	1141	7	35	1046	Y	2.31x1.44	4	2.69x1.44	2.78x1.73	abcdfg	Zen	1⅝	......	26	34⅝	41	3	64
(h)	E	Eat	HG	Al	39	.990x3.25	4	1141	7	35	1046	Y	2.31x1.44	4	2.69x1.44	2.78x1.73	abcdfg	Zen	1½	......	22⅞	39⅝	41	3	65
(h)	E	Eat	HG	Al	40	.990x3.25	4	1141	7	35	1046	Y	2.31x1.44	4	2.69x1.44	2.78x1.73	abcdfg	Zen	1½	......	22⅞	41 1/16	41	3	66
(h)	E	Eat	HG	Al	49	1.12x3.38	4	1340	9¾	51	5046	Y	2.37x1.62	7	2.75x2.28	2.75x2.37	abcdfg	Hol	1¼	......	32⅝	44⅞	48½	3	67
(h)	E	Eat	HG	Al	50	1.12x3.63	4	1340	9¾	51	5046	Y	2.62x1.75	7	2.75x2.28	2.75x2.37	abcdfg	Hol	1¼	......	32⅝	44⅞	50¼	3	68
(h)	E	Eat	HG	Al	66	1.25x3.71	4	1340	10¾	67	5046	Y	2.62x1.75	7	3.00x2.37	3.00x2.50	abcdfg	Zen	1½	......	39⅝	41½	49¾	3	69
(h)	E	Eat	HG	Al	71	1.25x3.96	5	1340	10¾	67	5046	Y	2.62x1.75	7	3.00x2.37	3.00x2.50	abcdfg	Zen	1½	......	39⅝	41½	49¾	3	70
(h)	N	......	HG	CI	......	......	3	......	5¾	......	1045	N	1.43x1.06	3	1.75x0.75	1.75x1.32	acd	Zen	1	330	17¾	19 1/16	29½	......	71
(h)	N	......	HG	Al	......	.703x2.43	3	CS	5¾	......	1045	N	1.5x1.18	3	1.75x1.78	1.75x1.37	acdr	Zen	1	390	17¾	19 1/16	29¼	......	72
(h)	N	......	HG	Al	......	.708x2.75	3	1030	5¾	......	1045	....	1.50x1.00	3	1.75x1.43	1.75x1.21	acdr	Zen	1	410	17¾	19 1/16	29¼	......	73
(h)	N	......	HG	Al	......	.859x2.69	4	CS	7	......	1046	N	1.93x1.31	3	2.25x1.89	2.25x1.18	acdr	Zen	1¼	565	19½	22⅛	38⅛	......	74
(k)	N	......	HG	CI	......	.859x2.81	4	CS	7	......	1045	Y	2.06x1.31	4	2.25x1.73	2.25x1.28	acdr	Zen	1½	695	19⅝	22⅛	42 1/16	......	75
45	N	......	HG	Al	......	.859x2.87	4	CS	8⅝	......	1045	Y	2.12x1.37	4	2.37x2.06	2.37x1.43	acdr	Zen	1½	825	23 1/16	23¾	43⅝	......	76
(k)	N	......	HG	Al	......	1.10x3.43	5	CS	8⅝	......	1045	Y	2.25x1.56	7	2.62x2.15	2.62x1.56	acdr	Str	1⅝	1070	24⅝	25⅛	48¾	......	77
(h)	N	......	HG	Al	......	.859x2.87	4	1035	7	......	1045	....	2.12x1.37	3	2.37x2.06	2.37x1.43	acdr	Zen	1¼	510	21 1/16	22 1/16	34 1/16	......	78
(h)	N	......	HG	Al	......	.859x2.69	4	CS	7	......	1045	N	1.93x1.31	3	2.25x1.89	2.25x1.18	acdr	Zen	1¼	565	19½	22⅛	38⅛	......	79
(k)	N	......	HG	Al	......	.859x2.81	4	CS	7	......	1045	Y	2.06x1.31	4	2.25x1.73	2.25x1.28	acdr	Zen	1½	695	19⅝	22⅛	42 1/16	......	80
45	N	......	HG	Al	......	.859x2.87	4	CS	8⅝	......	1045	Y	2.12x1.37	4	2.37x2.06	2.37x1.43	acdr	Zen	1½	825	21 1/16	23¾	43⅝	......	81
(k)	N	......	HG	Al	......	1.10x3.43	5	CS	8⅝	......	1045	Y	2.25x1.56	7	2.62x2.15	2.62x1.56	acdr	Str	2	1070	24⅝	25⅛	48¾	......	82
(k)	......	......	HG	Al	......	1.25x3.63	5	CS	8⅝	......	1045	Y	2.5x1.68	7	2.87x2.71	2.87x1.65	acdr	Str	2	1280	26 1/16	25 11/16	53 1/16	......	83
(k)	N	......	HG	Al	......	1.10x3.43	5	CS	8⅝	......	1045	Y	2.25x1.56	7	2.62x2.15	2.62x1.56	acdr	Str	1⅝	1025	24⅝	25⅛	48¾	......	84
(k)	N	......	HG	Al	......	1.25x3.63	5	CS	8⅝	......	1045	Y	2.5x1.68	7	2.87x2.71	2.87x1.65	acdr	Str	2	1200	26 1/16	25 1/16	51 1/16	......	85
(h)	N	......	HG	Al	......	.703x2.43	3	CS	5¾	......	1045	N	1.5x1.18	3	1.75x1.78	1.75x1.37	acdr	Zen	1¼	365	17⅝	19 1/16	29⅝	......	86
(h)	N	......	HG	Al	......	.859x2.87	4	1035	7	......	1045	....	2.12x1.37	3	2.37x2.06	2.37x1.43	acdr	Zen	1¼	435	21 1/16	22¾	33	......	87
(h)	N	......	HG	Al	......	.859x2.69	4	CS	7	......	1045	N	1.93x1.31	3	2.25x1.89	2.25x1.18	acdr	Zen	1⅝	500	23 1/16	22 1/16	33	......	88
(k)	N	......	HG	Al	......	.859x2.81	4	CS	7	......	1045	Y	2.06x1.31	4	2.25x1.73	2.25x1.28	acdr	Zen	1⅝	660	21 11/16	23⅛	38⅛	......	89

For abbreviations, see pages 150 and 151

For Directory of the Manufacturers listed above, see page 63.

AMERICAN GASOLINE

Line Number	Engine Make and Model	Designed for	Number of Cylinders, Bore and Stroke (In.)	Maximum Brake Hp. at Specified R.P.M.: With Bare Engine	Maximum Brake Hp. at Specified R.P.M.: With Standard Accessories	Piston Displacement (Cu. In.)	Compression Ratio	Maximum Torque at R.P.M. (Lb. Ft.) with or without Accessories	Cylinder Liners—Type	Crankcase—Upper Half Integral with Cylinders	Valves: Arrangement	Valves: Exhaust Head Material (S.A.E. No.)	Max. Head Diameter (In.): Intake	Max. Head Diameter (In.): Exhaust	Min. Port Diameter (In.): Intake	Min. Port Diameter (In.): Exhaust	Lift (In.): Intake	Lift (In.): Exhaust	Stem Diameter (In.): Intake	Stem Diameter (In.): Exhaust
	Gray Marine, Cont.																			
1	Phantom 6-125	M	6-3 7/16x4 3/8		125-3800	244	7.70		N	In	L	Sil	1.70	1.42	1.56	1.31	.311	.311	.339	.343
2	Fireball 4-50	M	4-2 7/8x3 1/2		50-4000	91	7.45		N	In	L	Sil	1.20	1.02	1.06	.875	.284	.284	.314	.333
3	Fireball 4-90	M	4-3 7/16x4 3/8		90-4000	162	8.00		N	In	L	Sil	1.64	1.45	1.16	1.07	.331	.331	.340	.316
4	Fireball 6-140	M	6-3 7/16x4 3/8		140-4000	244	9.00		N	In	L	Sil	1.70	1.58	1.43	1.31	.360	.360	.339	.339
5	Fireball 6-160	M	6-3 7/16x4 3/8		160-4000	244	9.1		N	In	L	Sil	1.70	1.58	1.43	1.31	.360	.360	.339	.371
6	Racing 91	M	4-2 7/8x3 1/2		65-4600	91	9.84		N	In	L	Sil	1.33	1.23	1.16	1.07	.284	.284	.313	.313
7	Racing 244	M	6-3 7/16x4 3/8		190-5000	244	9.14		N	In	L	Sil	1.70	1.58	1.56	1.43	.360	.360	.339	.371
8	750	M	4-3 7/16x4 3/8		75-3600	162.0	8.00		N	In	L	Sil	1.64	1.45	1.37	1.18	.331	.331	.340	.313
9	100	M	6-3 5/16x4 3/8		100-3400	226.0	8.00		N	In	L	Sil	1.51	1.33	1.37	1.18	.311	.311	.340	.339
10	115	M	6-3 7/16x4 3/8		115-3600	244.0	7.70		N	In	L	Sil	1.70	1.42	1.56	1.31	.311	.311	.339	.343
11	150	M	6-4x4 3/8		150-3400	330.0	7.50		N	In	L	Sil	1.89	1.51	1.62	1.37	.354	.354	.403	.401
12	**Hall-Scott** (H) 130	T,B,FA	6-4 1/4x5	122-2800	107-2800	425.8	4.96	290-1000 (BE)	W	In	I	2112	2.28	2.16	2.12	1.90	.421	.421	.435	.434
13	(H) 135	T,B,FA	6-4 1/2x5	140-2800	122-2800	477.1	5.50	340-1000 (BE)	W	In	I	2112	2.28	2.16	2.12	1.90	.421	.421	.435	.434
14	(H) 136	T,B	6-4 1/2x5	157-2800	136-2600	477.1	6.50	380-1600 (BE)	W	In	I	2112	2.15	2.02	2.00	1.75	.450	.450	.435	.434
15	(H) 504	T,B	6-4 5/8x5	180-2500	159-2500	504.0	6.00	425-1600 (BE)	W	In	I	2112	2.15	2.02	2.00	1.75	.450	.450	.435	.434
16	(H) 180-1, 180-3	B	6-5x6	208-2200	193-2200	707.0	6.00	640-1500 (BE)	W	In	I	2112	2.63	2.38	2.38	2.02	.482	.482	.497	.528
17	(H) 190-2	B	6-5 1/4x6	220-2200	200-2200	779.0	5.60	625-1300 (BE)	W	In	I	2112	2.63	2.38	2.38	2.02	.482	.482	.497	.528
18	(H) 190-1, 190-3	B	6-5 1/4x6	235-2200	215-2200	779.0	6.00	640-1400 (BE)	W	In	I	2112	2.63	2.38	2.38	2.02	.482	.482	.497	.528
19	470	Tr,In	6-5 1/2x6	245-2100		855.3	5.20	600-1600 (BE)	N	Se	I	2112	2.62	2.37	2.37	2.02	.547	.547	.497	.528
20	490	Tr,In	6-5 3/4x6	268-2100		934.8	5.70	760-1400 (BE)	N	Se	I	2112	2.62	2.37	2.37	2.02	.547	.547	.497	.528
21	400	T	6-5 3/4x7	288-1800	280-1800	1090.0	5.70	865-1200 (BE)	N	Se	I	2112	2.87	2.75	2.62	2.50	.482	.482	.497	.528
22	Invader 168-67	M	6-5 1/2x7		252-2100	997.8	5.00		N	In	I	2112	2.87	2.87	2.62	2.62	.482	.482	.497	.528
23	Invader 168-69	M	6-5 1/2x7		275-2100	997.8	5.00		N	In	I	2112	2.87	2.87	2.62	2.62	.482	.482	.497	.528
24	Defender 2266-67	M	12-5 3/4x7		605-2100	2181.0	7.00		N	Se	I	2112	2.87	2.75	2.62	2.50	.482	.472	.497	.528
25	Defender 2266-69	M	12-5 3/4x7		630-2100	2181.0	7.00		N	Se	I	2112	2.87	2.75	2.62	2.50	.482	.482	.497	.528
26	Defender 3300-69	M	12-5 3/4x7		900-2100	2181.0	6.00		N	Se	I	2112	2.87	2.75	2.62	2.50	.482	.482	.497	.528
27	**Hercules** BXB	M,Tr,Ind	2-2 7/8x3	10-2300	8.5-2300	39.0	6.00	29-1200 (BE)	N	In	L	Aus	1.30	1.05	1.12	.875	.200	.200	.248	.248
28	NXA	M,Tr,Ind	2-3x4	13-2000	11-2000	56.5	6.50	39-1100 (BE)	N	In	L	Aus	1.48	1.35	1.25	1.12	.250	.250	.310	.310
29	NXB	M,Tr,Ind	2-3 1/4x4	16-2000	13-2000	66.3	6.50	46-1100 (BE)	N	In	L	Aus	1.48	1.35	1.25	1.12	.250	.250	.310	.310
30	ZXA	M,T,Tr,Ind	4-2 1/2x3	23-3800	19-3800	58.9	6.10	37-1800 (BE)	N	In	L	Aus	1.30	1.05	1.12	.875	.200	.200	.248	.248
31	ZXB	T,Tr,M,Ind	4-2 5/8x3	25-3800	21-3800	64.9	6.10	38-1800 (BE)	N	In	L	Aus	1.30	1.05	1.12	.875	.200	.200	.248	.248
32	IXA	T,Tr,M,Ind	4-3x4	40-3200	34-3200	113.0	5.50	79-2000 (BE)	N	In	L	Aus	1.48	1.35	1.25	1.12	.250	.250	.310	.310
33	IXB	T,Tr,M,Ind	4-3 1/4x4	47-3200	40-3200	133.0	5.50	92-1800 (BE)	N	In	L	Aus	1.48	1.35	1.25	1.12	.250	.250	.310	.310
34	JX4E	T,Tr,M,Ind	4-3 1/2x4 1/4	52-2900	44-2900	164.0	6.70	121-1400 (BE)	N	In	L	2112N	1.68	1.56	1.50	1.37	.356	.356	.373	.373
35	JX4C	T,Tr,M,Ind	4-3 3/4x4 1/4	60-2900	51-2900	188.0	6.70	139-1400 (BE)	N	In	L	2112N	1.68	1.56	1.50	1.37	.356	.356	.373	.373
36	JX4D	T,Tr,M,Ind	4-4x4 1/4	68-2900	57-2900	214.0	6.70	157-1400 (BE)	N	In	L	2112N	1.68	1.56	1.50	1.37	.356	.356	.373	.373
37	QXA	T,B,Tr,M,Ind	6-3 1/8x4 1/8	64-3200	54.5-3200	190.0	6.50	132-1300 (BE)	N	In	L	Aus	1.48	1.39	1.31	1.12	.311	.311	.310	.310
38	QXB	T,B,Tr,M,Ind	6-3 1/4x4 1/8	69-3200	59-3200	205.0	6.50	142-1400 (BE)	N	In	L	Aus	1.48	1.39	1.31	1.12	.311	.311	.310	.310
39	QXC	T,B,Tr,M,Ind	6-3 3/8x4 1/8	7.5-3200	66-3200	221.0	6.50	159-4000 (BE)	N	In	L	Aus	1.48	1.39	1.50	1.25	.311	.311	.310	.310
40	QXLD	T,B,Tr,M,Ind	6-3 7/16x4 1/8	91-3200	77-3200	236.7	6.50	180-1400 (BE)	N	In	L	Aus	1.61	1.39	1.50	1.25	.311	.311	.310	.310
41	JXE	T,B,Tr,M,Ind	6-3 1/2x4 1/4	91-3200	77-3200	245.0	6.50	184-1400 (BE)	N	In	L	Aus	1.68	1.56	1.50	1.37	.356	.356	.373	.373
42	JXB	T,B,Tr,M,Ind	6-3 5/8x4 1/4	98-3200	83-3200	263.0	6.50	190-1400 (BE)	N	In	L	Aus	1.68	1.56	1.50	1.37	.356	.356	.373	.373
43	JXC	T,B,Tr,M,Ind	6-3 3/4x4 1/4	103-3200	87.5-3200	282.9	6.50	207-1400 (BE)	N	In	L	Aus	1.68	1.56	1.50	1.37	.356	.356	.373	.373
44	JXD	T,B,Tr,M,Ind	6-4x4 1/4	113-3000	98-3000	320.0	6.50	240-1200 (BE)	N	In	L	Aus	1.68	1.56	1.50	1.37	.359	.359	.373	.373
45	JXLD	T,B,Tr,M,Ind	6-4x4 1/2	131-3200	111-3200	339.0	6.90	272-1400 (BE)	N	In	L	Aus	1.83	1.67	1.72	1.50	.356	.356	.373	.373
46	WXC-3	T,B,Tr,M,Ind	6-4 1/4x4 1/2	131-2600	111-2600	383.0	6.60	298-1400 (BE)	N	In	L	Aus	1.87	1.75	1.62	1.56	.388	.388	.373	.373
47	WXLC	T,B,Tr,M,Ind	6-4x4 3/4	123-2600	104-2600	358.0	6.60	275-1200 (BE)	N	In	L	Aus	1.87	1.75	1.68	1.62	.388	.388	.373	.373
48	WXLC-3	T,B,Tr,M,Ind	6-4 1/4x4 3/4	139-2600	118-2600	404.0	6.60	312-1300 (BE)	N	In	L	Aus	1.87	1.75	1.68	1.62	.388	.388	.373	.373
49	TDXB	T,B,Tr,M,Ind	6-4 3/8x5 1/4	160-2600	136-2600	474.0	6.50	366-1400 (BE)	N	In	L	2112	2.06	2.00	1.87	1.75	.388	.388	.373	.437
50	RXB	T,B,Tr,M,Ind	6-4 1/2x5 1/4	137-2400	116-2400	501.0	6.50	350-1200 (BE)	N	In	L	Aus	2.00	2.00	1.75	1.75	.388	.388	.373	.373
51	RXC	T,B,Tr,M,Ind	6-4 5/8x5 1/4	143-2400	121-2400	529.2	6.50	372-1200 (BE)	N	In	L	Aus	2.00	2.00	1.75	1.75	.388	.388	.373	.373
52	RXLC	T,B,Tr,M,Ind	6-4 5/8x5 1/4	146-2400	124-2400	529.2	6.20	408-1100 (BE)	N	In	L	Aus	2.00	2.00	1.81	1.75	.388	.388	.373	.373
53	RXLD	T,B,Tr,M,Ind	6-4 3/4x5 1/4	154-2400	131-2400	558.0	6.50	430-1100 (BE)	N	In	L	Aus	2.00	2.00	1.81	1.75	.388	.388	.373	.373
54	RXLDH	T,B,Tr,M,Ind	6-4 3/4x5 1/4	180-2600	153-2600	558.0	6.60	443-1400 (BE)	N	In	L	2112	2.06	2.00	1.87	1.75	.442	.442	.435	.435
55	HXB	T,B,Tr,M,Ind	6-5x6	159-2000	135-2000	707.0	5.75	602- 900 (BE)	N	Se	L	Aus	2.43	2.31	2.12	2.00	.468	.468	.498	.490
56	HXC	T,B,Tr,M,Ind	6-5 1/4x6	175-2000	149-2000	779.0	5.75	655- 900 (BE)	N	Se	L	Aus	2.43	2.31	2.12	2.00	.468	.468	.498	.490
57	HXD	T,B,Tr,M,Ind	6-5 1/2x6	202-2000	172-2000	855.0	5.75	645- 900 (BE)	N	Se	L	Aus	2.43	2.31	2.12	2.00	.468	.468	.498	.490
58	HXE	T,B,Tr,M,Ind	6-5 3/4x6	227-2000	193-2000	935.0	6.20	750-1000 (BE)	N	Se	L	Aus	2.43	2.31	2.12	2.00	.468	.468	.498	.498
59	**International** U-1	Tr,Ind	4-2 5/8x2 3/4	16.4-2500	16-2500	59.5	6.50	38-1450 (EA)	N	In	L	CNS	1.09	.91	.99	.79	.222	.222	.310	.310
60	U-2A	Tr,Ind	4-3x4	25.8-1800	24-1800	113.1	6.00	82-1200 (EA)	W	In	I	CNS	1.34	1.16	1.19	1.00	.261	.261	.341	.341
61	U-4	Tr,Ind	4-3 3/8x4 1/4	33.5-1800	31.5-1800	152.1	5.90	108-1250 (EA)	D	In	I	CNS	1.50	1.37	1.34	1.22	.343	.343	.341	.341
62	U-6	Tr,Ind	4-3 7/8x5 1/4	43-1500	41-1500	247.7	5.68	182- 900 (EA)	D	In	I	CNS	1.81	1.66	1.59	1.44	.438	.438	.372	.372
63	U-9	Tr,Ind	4-4.4x5 1/2	56.5-1500	55-1500	334.4	5.40	229- 950 (EA)	D	In	I	CNS	2.09	1.91	1.87	1.69	.463	.469	.402	.402
64	SD-220	T	6-3 5/8x3 9/16	100-3600	90-3600	220.5	6.50	167-1200 (EA)	N	In	I	XCR	1.66	1.52	1.25	1.19	.398	.398	.392	.370
65	SD-240	T	6-3 9/16x4.02	108-3600	93-3400	240.3	6.50	186-1100 (EA)	N	In	I	XCR	1.66	1.52	1.25	1.19	.398	.398	.372	.370
66	SD-269	T	6-3 9/16x4 1/2	100-3000	88.6-2800	269.1	6.30	216-1000 (EA)	D	In	I	XCR	1.66	1.47	1.50	1.31	.365	.365	.342	.341
67	RD-372	T	6-4 3/8x4 1/8	144-3200	128-2850	372.1	6.30	280-1000 (EA)	D	In	I	Sil	2.25	1.55	2.00	1.38	.450	.450	.434	.434
68	RD-406	T	6-4 3/8x4 1/2	151-3200	138-2250	405.9	6.30	314-1000 (EA)	D	In	I	Sil	2.25	1.55	2.00	1.38	.450	.450	.434	.434
69	RD-450	T	6-4 3/8x5	162-3000	146-2800	451.0	6.20	354-1000 (EA)	D	In	I	Sil	2.25	1.55	2.00	1.38	.450	.450	.434	.434
70	**Jacobs** O-241-U	M	4-4 3/8x4	100-2800		241.0	6.50	208-1700 (BE)	D	In	I	Sil	2.00	1.80	1.87	1.62	.500	.500	.433	.433
71	O-360-U	T,B,M	6-4 3/8x4	150-2800		361.0	6.50	310-1700 (BE)	D	In	I	Sil	2.00	1.80	1.87	1.62	.500	.500	.433	.433
72	**Kermath** Cub	M	4-2 3/8x3		25-3400	53.0	6.00	40-1700 (EA)	N	In	L	Sil	1.25	1.12	1.12	.875	.250	.250	.310	.310
73	Jeep	M	4-3 1/8x4 3/8		40-2700	134.0	6.48	106-2200 (EA)	N	In	L		1.53	1.48	1.34	1.23	.359	.359	.373	.373
74	Jeep	M	4-3 1/8x4 3/8		61-3600	134.0	6.48	106-2200 (EA)	N	In	L		1.53	1.48	1.34	1.23	.359	.359	.373	.373
75	Prince	M	6-3 3/8x4 1/8		95-3600	221.0	6.50		N	In	L	Sil	1.87	1.87	1.81	1.81	.281	.281	.310	.310
76	Rover	M	6-4x4 1/4		122-3000	320.0	6.90	235-2000 (EA)	N	In	L	CNS	1.84	1.62	1.62	1.37	.378	.378	.373	.373
77	Mate	M	6-4 1/4x4 3/4		155-3000	404.0	6.50		N	In	L	CNS	2.06	1.87	1.81	1.62	.500	.500	.373	.373
78	Farer	M,Ind	6-5x5 3/4		200-2400	678.0	5.70	480-1000 (EA)	N	Se	L	CNS	2.62	2.37	2.37	2.00	.437	.375	.437	.437
79	Raider-6	M,Ind	6-5 1/4x6		250-2400	779.0	6.00	620-2200 (EA)	N	Se	I	Tun	1.93	1.93	1.78	1.78	.375	.375	.437	.437
80	Raider-12	M,Ind	12-5 1/4x6		550-2400	1560.0	5.70	1070-1400 (EA)	N	Se	I	CNS	1.93	1.93	1.78	1.78	.375	.375	.437	.437
81	Screwball-1	M,Ind	1-2 3/4x2 3/4		5-3400	16.4	6.00	9-2700 (EA)	N	In	L	CNS					.250	.250		
82	Screwball-2	M,Ind	2-2 3/4x2 3/4		10-3400	32.8	6.00	18-2700 (EA)	N	In	L	CNS					.250	.250		
83	Screwball-4-25	M,Ind	4-2 1/2x2 1/4		20-3200	44.0	7.80	32-3200 (EA)	N	In	L	CNS	1.17	1.05	1.05	.925	.225	.225	.313	.312
84	Screwball-4-50	M,Ind	4-3 1/4x4		50-3600	133.0	6.00	100-1400 (EA)	N	Se	L	CNS	1.31	1.31	1.12	1.12	.250	.250	.312	.312
85	Screwball-8-F	M,Ind	8-3 1/4x3 5/8		100-3000	239.0	6.80	188-1900 (BE)	N	In	L	CNS	1.51	1.51	1.34	1.34	.292	.292	.341	.341
86	Screwball-8-L	M,Ind	8-3 1/2x4 3/8		140-3200	337.0	6.40	210-2400 (BE)	N	In	L	HFA	1.80	1.51	1.57	1.35	.357	.340	.341	.341

For abbreviations, see pages 150 and 151

For Directory of the Manufacturers listed above, see page 63.

ENGINES—Continued

Valves: Angle (Deg.)	Valves: Seats: Inserts Used?	Valves: Seats: Insert Material (S.A.E. No.)	Camshaft Drive—Type	Pistons: Material	Pistons: Weight with Pins, Rings, Bushings (Oz.)	Pistons: Piston Pin—Diameter and Length (In.)	Number of Rings per Piston	Connecting Rods: Material	Connecting Rods: Center to Center Length (In.)	Connecting Rods: Weight with Bushing and Cap (Oz.)	Crankshaft: Material	Crankshaft: Counter Balance Used	Crankshaft: Crank-Pin Diameter and Length (In.)	Crankshaft: Main Bearings: Number	Crankshaft: Main Bearings: Diameter and Length (In.): Front	Crankshaft: Main Bearings: Diameter and Length (In.): Rear	Oil Pressure to—	Carburetor: Make	Carburetor: Size	Engine Weight without Carburetor or Ignition (Lb.)	Overall Dimensions (In.): Width	Overall Dimensions (In.): Height	Overall Dimensions (In.): Length	Clutch Housing (S.A.E. Nos.)	Line Number
45	N	......	HG	Al	......	.859x2.87	4	CS	8 5/8	......	1045	Y	2.12x1.37	4	2.37x2.06	2.37x1.43	acdr	Zen	1 1/2	790	25 3/16	23 1/8	42 3/16	......	1
(h)	N	......	HG	Al	......	.703x2.43	3	CS	5 3/4	......	1045	N	1.5x1.18	3	1.75x1.78	1.75x1.37	acdr	Zen	1 1/4	365	17 3/4	19 1/8	29 1/4	......	2
(h)	N	......	HG	Al	......	.859x2.66	4	CS	7	......	1045	N	1.93x1.31	3	2.25x1.89	2.25x1.18	acdr	Zen	1 1/4	500	21 3/16	22 3/16	33	......	3
45	N	......	HG	Al	......	.859x2.87	4	CS	8 5/8	......	1045	Y	2.12x1.37	4	2.37x2.06	2.37x1.43	acdr	Zen	1 1/2	790	25 13/16	23 1/8	42 3/16	......	4
45	N	......	HG	Al	......	.859x2.87	4	CS	8 5/8	......	1045	Y	2.12x1.37	4	2.37x2.06	2.37x1.43	acdr	Zen	1 1/2	790	27 1/4	25 3/4	42 3/16	......	5
(h)	N	......	HG	Al	......	.703x2.43	3	CS	5 3/4	......	1045	N	1.51x1.18	3	1.75x1.78	1.75x1.37	acdr	Zen	1 1/4	......	17 3/4	19 1/8	29 1/4	......	6
45	N	......	HG	Al	......	.874x2.92	4	CS	8 5/8	......	1045	Y	2.12x1.37	4	2.37x2.06	2.37x1.43	acdr	Zen	1 1/2	......	29 3/4	27 3/16	37 15/16	......	7
(h)	N	......	HG	Al	......	.859x2.68	4	1035	7	......	1045	....	1.93x1.31	3	2.25x1.89	2.25x1.18	acdr	Zen	1 1/4	495	21 3/16	22 13/16	33	......	8
(k)	N	......	HG	Al	......	.859x2.81	4	1030	7	......	1045	....	2.06x1.31	4	2.25x1.73	2.25x1.28	acdr	Zen	1 1/4	645	21 13/16	23 1/4	39 7/8	......	9
45	N	......	HG	Al	......	.859x2.87	4	1035	8 5/8	......	1045	....	2.12x1.37	4	2.37x2.06	2.37x1.43	acdr	Zen	1 1/2	790	25 3/16	23 1/8	42 3/16	......	10
(k)	N	......	HG	Al	......	1.10x3.43	5	1035	8 5/8	......	1045	....	2.25x1.56	7	2.62x2.15	2.62x1.56	acdr	Zen	2	1000	24 5/8	25 1/4	48 1/4	......	11
30	E	CA	Ch	Al	82	1.12x3.74	4	AS	11	104	4140	Y	2.62x2.00	7	3.00x1.90	3.00x2.25	acdefg	Zen	1 3/4	1282*	64 3/4	18 3/16	82 7/8	2, 3	12
30	E	CA	Ch	Al	86	1.12x3.98	4	AS	11	104	4140	Y	2.62x2.00	7	3.00x1.50	3.00x2.25	acdefg	Zen	1 3/4	1265*	64 3/4	18 3/16	82 7/8	2, 3	13
(h)	E	4140°	Ch	Al	83	1.12x3.98	4	3135	11	91	4140	Y	2.62x2.00	8	3.00x1.46	3.00x2.28	acdefg	Zen	1 3/4	1283	66 3/16	20 3/16	53 1/4	2	14
(h)	E	4140°	Ch	Al	74.4	1.12x3.98	4	3135	11	79.1	4142	Y	2.62x2.00	8	3.00x1.46	3.00x2.28	acdefg	Zen	2	1275	68 3/16	20 3/16	70 3/16	2	15
(h)	E	4140°	Ch	Al	96	1.37x4.20	4	3135	11	104	4140	Y	2.75x2.44	7	3.25x2.19	3.25x2.50	acdefg	Zen	2	1786	64 3/16	22	71 3/4	1, 2	16
(h)	E	4140°	Ch	Al	101	1.37x4.44	6	3135	11	104	4140	Y	2.75x2.44	8	3.25x2.19	3.25x2.50	acdefg	Zen	2	1786	64 3/16	22	71 3/4	1, 2	17
(h)	E	4140°	Ch	Al	101	1.37x4.44	6	3135	11	104	4140	Y	2.75x2.44	7	3.25x2.19	3.25x2.50	acdefg	Zen	2 1/2	1970	56 1/8	22	71 3/4	1, 2	18
(h)	E	4140°	Ch	Al	118	1.37x4.66	5	3140	12	157	4140	Y	3.00x2.43	7	3.25x2.09	3.25x3.12	acdefg	Zen	2 1/2	2116	28	44 5/8	60 3/16	1, 2, 0	19
(h)	E	4140°	Ch	Al	132	1.37x4.93	5	3140	12	157	4140	Y	3.00x2.43	7	3.25x2.09	3.25x3.12	acdefg	Zen	2 1/2	2136	28	44 5/8	60 3/16	1, 2, 0	20
(h)	E	4140°	HC	Al	120	1.37x4.93	6	3140	12	157	4140	Y	3.00x2.43	7	3.25x2.09	3.25x3.12	acdefg	Zen	2 1/2	1950*	28	44 5/8	60 3/16	1, 2, 0	21
30	N	......	Ch	Al	106	1.37x4.66	5	AS	11	117	4140	Y	2.50x2.45	7	2.75x1.94	2.75x1.94	acdefg	Zen(2)	2	3265*	25	47 1/2	90 1/2	......	22
30	N	......	Ch	Al	106	1.37x4.66	5	AS	11	117	4140	Y	2.50x2.45	7	2.75x1.94	2.75x1.94	acdefgr	Zen(2)	2	2200*	25	39 3/4	74 3/16	......	23
30	E	CA	HC	Al	128	1.37x4.94	6	3140	12	237 1/2	4140	Y	3.00x2.43	7	3.25x2.09	3.25x2.09	acdefgr	Zen(2)	2 1/2	4580*	43 3/4	50 1/4	108 3/16	......	24
30	E	CA	HC	Al	128	1.37x4.94	6	3140	12	237 1/2	4140	Y	3.00x2.43	7	3.25x2.09	3.25x2.09	acdefgr	Zen(2)	2 1/2	3650*	45	42 3/4	86	......	25
30	E	CA	HC	Al	123	1.37x4.94	6	3140	12	237 1/2	4140	Y	3.00x2.43	7	3.25x2.09	3.25x2.09	acdefgr	Zen(4)	2 1/2	4105*	43 3/4	56 1/4	91 3/16	......	26
30	N	......	HG	Cl	25	.687x2.80	3	3140	6 1/2	15	1045	Y	1.50x1.00	2	2.00x1.25	2.00x1.37	acg	Op	5/8	131	16 1/2	15 1/2	18 3/16	5, 6	27
30	N	......	HG	Cl	28	.750x2.56	3	3140	6 3/16	21	1045	Y	1.75x1.12	2	2.00x1.56	2.00x1.62	acg	Op	3/4	270	17 3/4	18 3/4	20 3/16	4, 6	28
30	N	......	HG	Cl	29.5	.750x2.81	3	3140	6 3/16	21	1045	Y	1.75x1.12	2	2.00x1.56	2.00x1.62	acg	Op	3/4	270	17 3/4	18 3/4	20 3/16	4, 6	29
30	N	......	HG	Cl	19	.687x2.20	3	3140	6 1/2	18	4140	N	1.50x1.00	3	2.00x1.31	2.00x1.37	acg	Op	Op	179	16 1/2	16 1/4	23 3/16	5, 6	30
30	N	......	HG	AC	21	.687x2.33	3	3140	5 1/2	15	4140	N	1.50x1.00	3	2.00x1.31	2.00x1.37	acg	Op	Op	179	16 1/2	16 1/4	23 3/16	5, 6	31
30	N	......	HG	AC	28	.750x2.56	3	3140	6 3/16	21	CS‡	N	1.75x1.12	3	2.00x1.56	2.00x1.62	acg	Op	Op	285	18 11/16	19 3/4	36 1/16	4, 5	32
30	N	......	HG	AC	29.5	.750x2.81	3	3140	6 3/16	21	CS‡	N	1.75x1.12	3	2.00x1.56	2.00x1.62	acg	Op	Op	293	18 11/16	19 3/4	36 1/16	4, 6	33
45	N	......	HG	Al	31	1.00x2.90	4	1040	8	37	1046	....	2.00x1.50	6	2.50x1.31	2.50x2.12	acg	Op	1 1/4	470	19 11/16	23	30 7/8	3, 4, 5	34
45	N	......	HG	Al	37.5	1.00x3.25	4	1040	8	37	1046	....	2.00x1.50	6	2.50x1.31	2.50x2.12	acg	Op	1 1/4	470	19 11/16	23	30 7/8	3, 4, 5	35
45	N	......	HG	Al	406	1.00x3.50	4	1040	8	37	1046	....	2.00x1.50	6	2.50x1.31	2.50x2.12	acg	Op	1 1/4	470	19 11/16	23	30 7/8	3, 4, 5	36
30	N	......	HG	Al	23.1	.875x2.67	4	1035	7	26	CS‡	Op	2.00x1.25	7	2.50x1.31	2.50x1.93	acg	Op	1 1/4	440	17 1/16	20 1/16	35 1/16	5	37
30	N	......	HG	Al	24	.875x2.81	4	1035	7	28	CS‡	Op	2.00x1.25	7	2.50x1.31	2.50x1.93	acg	Op	1 1/4	440	17 1/16	20 1/16	35 1/16	5	38
30	N	......	HG	Al	26	.875x2.92	4	1035	7	26	CS‡	Op	2.00x1.25	7	2.50x1.31	2.50x1.93	acg	Op	1 1/4	440	17 1/16	20 1/16	35 1/16	5	39
30	N	......	HG	Al	26	.875x2.92	3	1035	7	26	CS‡	Y	2.00x1.25	7	2.50x1.31	2.50x1.93	acg	Op	1 1/4	445	17 1/16	20 1/16	35 1/16	3, 4, 5	40
45	N	......	HG	Al	31	1.00x2.92	4	1040	8	37	CS‡	Op	2.00x1.50	7	2.50x1.31	2.50x2.12	acg	Op	1 1/4	590	18 11/16	24 1/16	39	3, 4, 5	41
45	N	......	HG	Al	35.5	1.00x3.17	4	1040	8	37	CS‡	Op	2.00x1.50	7	2.50x1.31	2.50x2.12	acg	Op	1 1/4	605	18 1/8	24 1/16	39	3, 4, 5	42
45	N	......	HG	Al	37.5	1.00x3.26	4	1040	8	37	CS‡	Op	2.00x1.50	7	2.50x1.31	2.50x2.12	acg	Op	1 1/4	605	18 1/8	24 1/16	39	3, 4, 5	43
45	N	......	HG	Al	40.5	1.00x3.51	4	1040	8	37	CS‡	Op	2.00x1.50	7	2.50x1.31	2.50x2.12	acg	Op	1 1/2	605	18 1/8	24 1/16	39	3, 4, 5	44
30	N	......	HG	Al	44.5	1.12x3.44	4	1035	8	39.2	CS‡	Y	2.00x1.50	7	2.50x1.31	2.50x2.12	acg	Op	1 3/4	630	18 1/8	24 1/16	39	3, 4, 5	45
45	N	......	HG	Al	50	1.12x3.56	4	1035	9 1/2	50	CS‡	Op	2.25x1.50	7	2.62x1.75	2.62x2.75	acdg	Op	1 1/2	820	23 3/32	28 3/32	42 3/16	2, 3	46
45	N	......	HG	Al	44	1.12x3.56	4	3140	8 7/8	50	CS‡	Op	2.25x1.50	7	2.62x1.75	2.62x2.75	acdg	Op	1 1/2	811	23 3/32	28 3/32	42 3/16	2, 3	47
45	N	......	HG	Al	50	1.12x3.56	4	3140	8 7/8	50	CS‡	Op	2.25x1.50	7	2.62x1.75	2.62x2.75	acdg	Op	1 3/4	828	23 3/32	28 3/32	42 3/16	2, 3	48
(h)	N	......	HG	Al	63.5	1.31x3.62	4	3140	9 5/8	76.9	1045‡	Y	2.62x2.00	7	3.00x1.93	3.00x2.93	acdg	......	2	1345	27 1/16	34 1/16	47 15/16	2	49
45	N	......	HG	Al	60	1.25x3.93	5	3140	9 5/8	78	CS‡	Op	2.62x2.00	7	3.00x1.93	3.00x2.93	acdg	Op	1 3/4	1000	23 15/16	32 15/16	46 3/16	2, 3	50
45	N	......	HG	Al	63	1.25x4.07	5	3140	9 5/8	78	CS‡	Op	2.62x2.00	7	3.00x1.93	3.00x2.93	acdg	Op	1 3/4	1010	23 15/16	32 15/16	46 3/16	2, 3	51
45	N	......	HG	Al	65	1.25x4.07	5	E-4342	9 5/8	97	CS‡	Op	3.00x2.00	7	3.50x1.93	3.50x2.93	acdg	Op	1 3/4	1195	25 1/16	35 3/32	46 3/16	1, 2	52
(h)	N	......	HG	Al	66	1.25x4.20	5	E-4342	9 5/8	97	CS‡	Op	3.00x2.00	7	3.50x1.93	3.50x2.93	acdg	Op	1 3/4	1195	25 1/16	35 3/32	46 3/16	1, 2	53
(h)	N	......	HG	Al	66.0	1.50x4.11	4	E-4342	9 5/8	97	1015‡	Y	3.00x2.00	7	3.50x1.93	3.50x2.93	acdg	......	2	1470	27 21/32	36 15/16	47 15/16	1, 2	54
30	N	......	HG	Al	98	1.50x4.43	4	3140	12	166	1045‡	Op	3.00x2.28	7	3.50x2.37	3.50x3.50	acdg	Op	2	1610	28 1/4	40 15/16	55 7/16	00, 0, 1	55
30	N	......	HG	Al	108	1.50x4.56	4	3140	12	166	1045‡	Op	3.00x2.28	7	3.50x2.37	3.50x3.50	acdg	Op	2	1810	28 1/4	40 15/16	55 7/16	00, 0, 1	56
30	N	......	HG	Al	119	1.50x4.81	4	3140	12	166	1045‡	Op	3.00x2.25	7	3.50x2.37	3.50x3.50	acdg	Op	2	1830	28 1/4	40 15/16	55 7/16	00, 0, 1	57
30	N	......	HG	Al	126	1.50x5.06	4	3140	12	166	1045‡	Op	3.00x2.25	7	3.50x2.37	3.50x3.50	acdg	Op	2	1830	28 1/4	40 15/16	55 7/16	00, 0, 1	58
45	N	......	HG	Cl	20	.698x2.19	3	1035	5	15	1046‡	N	1.50x .76	3	1.62x1.08	1.62x1.08	acdg	Own	3/4	279*	16 11/16	25	26 11/16	......	59
45	N	......	HG	Cl	35	.919x2.50	4	1040	7 1/4	33	1046‡	N	1.75x1.19	3	2.12x1.37	2.12x1.84	acdfg	Zen	7/8	478*	17 11/16	33 1/2	30 11/16	4	60
45	N	......	HG	Cl	53	1.11x2.78	4	1040	8	67	1046‡	N	2.25x1.23	3	2.50x1.49	2.50x1.49	acdfg	Own	1	680*	18 1/8	34 1/4	33 1/8	4	61
45	E	MA	HG	Cl	84	1.31x3.25	4	1040	10	93	1046‡	N	2.50x1.72	3	2.75x1.56	2.75x1.56	acdfg	Own	1 1/4	955*	20 5/8	38 3/4	37	2	62
45	E	MA	HG	Cl	115	1.50x3.71	5	1040	11	124	1046‡	N	3.00x1.97	3	3.25x1.87	3.25x1.87	abcdfg	Own	1 3/4	1230*	23 11/16	42 3/16	40 1/4	1	63
30	E	Dm	HG	Al	33	.875x2.95	4	DFS	6 11/16	38	C1046	....	2.38x1.16	4	2.75x1.36	2.75x1.95	abcdfg	Car	1 1/4	607	22 11/16	36 11/16	46 11/16	......	64
30	E	Dm	HG	Al	31	.875x2.95	4	DFS	6 11/16	36	C1046	....	2.38x1.16	4	2.75x1.36	2.75x1.95	abcdfg	Car	1 1/4	607	22 11/16	36 11/16	46 11/16	......	65
45	E	Dm	HG	Al	31	.919x2.95	4	DFS	8 3/16	43	C1046	....	2.12x1.41	4	2.70x1.12	2.70x1.23	abcdfg	Car	1 1/4	701	28 3/16	40 11/16	47 5/8	......	66
(n)	E	Dm	HG	Al	......	1.11x3.80	4	DFS	9	61	Ste	....	2.75x1.38	7	3.25x1.31	3.25x1.81	abcdfg	Hol	1 1/4	937	29 3/4	45 11/16	47 21/32	2	67
(n)	E	Dm	HG	Al	......	1.11x3.80	4	DFS	9	61	Ste	....	2.75x1.38	7	3.25x1.34	3.25x1.81	abcdfg	Hol	1 1/4	942	29 3/4	45 11/16	47 21/32	2	68
(n)	E	Dm	HG	Al	......	1.11x3.80	4	DFS	9	61	Ste	....	2.75x1.38	7	3.25x1.34	3.25x1.84	abcdfg	Hol	1 1/4	948	29 3/4	45 11/16	47 21/32	2	69
45	Bo	AIB	SG	Al	38.4	1.00x4.33	4	4140	6 1/2	34.4	4340	....	2.37x1.31	3	2.75x2.00	2.75x1.75	....	Zen	1 1/2	330	32 1/2	26.6	27.8	3	70
45	Bo	AIB	SG	Al	38.4	1.00x4.33	4	4140	6 1/2	34.4	4340	....	2.37x1.31	4	2.75x2.00	2.75x1.75	acdg	Zen	1 1/2	426	32 1/2	26.6	33.8	3	71
30	N	......	HG	Cl	19	.687x2.18	3	CS	5 1/2	15	CS	N	1.50x1.00	3	2.00x1.37	2.00x1.31	acdr	Str	3/4	360*	18 11/16	17 5/8	29 3/16	......	72
45	N	......	Ch	Al	12	.812x2.78	3	MS	9 3/16	34	1010	Y	1.93x1.31	3	2.33x1.75	2.33x1.92	acdr	Str	1 1/4	495	21 1/4	24 1/2	36	......	73
45	N	......	Ch	Al	12	.812x2.78	3	MS	9 3/16	34	1010	Y	1.93x1.31	3	2.33x1.75	2.33x1.92	acdr	Str	1 1/4	495	21 1/4	24 1/2	36	......	74
30	N	......	HG	Al	24	.875x2.79	4	CS	7	26	CS	N	2.00x1.25	7	2.50x1.93	2.50x1.87	acdr	Str	1 1/2	620*	24	24 1/8	42 3/16	......	75
30	N	......	HG	Al	40	1.00x3.51	4	CS	8	38	CS	N	2.00x1.50	7	2.50x2.12	2.50x1.37	acdr	Str	1 3/4	925*	21 11/16	27 3/4	52 5/8	......	76
30	N	......	HG	Al	......	1.12x3.62	4	CS	9	51	CS	Y	2.25x1.12	7	2.68x2.75	2.68x1.75	acdr	Str	2	1125*	24 1/4	29 5/8	56 3/16	......	77
45	N	......	HG	Als	82	1.25x4.50	4	DFS	11	80	CS	N	2.25x2.23	7	2.50x3.91	2.50x2.82	abcdgr	Str(2)	1 3/4	1570*	26 1/8	34 1/16	69 1/8	......	78
45	N	......	HG	Al	82	1.25x4.50	4	CNS	11	184	CNS	....	2.75x2.26	7	3.00x3.84	3.00x2.25	acdefg	Zen(2)	2	2450	27	40 1/4	77	4-2-0	79
45	N	......	SB	Als	82	1.25x4.50	4	CNS	11	184	CNS	Y	2.75x2.26	7	3.00x3.84	3.00x2.26	abcdgr	Str(4)	2	2700*	42 1/2	43 3/16	75 11/16	......	80
....	N	......	HG	Al	11.5	......	....	......	......	13.5	......	....	......	2	......	......	acdeg	......	....	......	......	......	......	......	81
....	N	......	HG	AL	11.5	......	....	......	......	13.5	......	....	......	2	......	......	acdeg	......	....	......	......	......	......	......	82
45	N	......	HG	Al	6.5	.62x2.25	4	3140	4 1/8	9.6	......	....	1.37x.870	5	1.37x1.31	1.50x2.00	acdg	......	....	193	......	......	......	......	83
30	N	......	SG	Cl	......	.75x2.62	3	Ste	7	......	Ste	....	1.50x1.50	3	......	......	PS	......	....	......	17	23	28	5	84
45	Bo	......	HG	Al	13.5	.75x2.86	4	CMS	7	19	CAS	....	2.14x1.78	3	2.50x1.50	2.50x1.97	acdg	Hol	1	850	22	32	25	......	85
45	E	......	HG	Al	20	.85x3.12	4	CMS	8 3/16	27	DFS	....	2.40x2.25	3	2.88x1.35	2.88x2.20	acdgt	Hol	1 1/4	950	27 3/4	34	27	......	86

For abbreviations, see pages 150 and 151

For Directory of the Manufacturers listed above, see page 63.

AMERICAN GASOLINE

Line Number	Engine Make and Model	Designed for	Number of Cylinders, Bore and Stroke (In.)	Maximum Brake Hp. at Specified R.P.M.: With Bare Engine	Maximum Brake Hp. at Specified R.P.M.: With Standard Accessories	Piston Displacement (Cu. In.)	Compression Ratio	Maximum Torque at R.P.M. (Lb. Ft.) with or without Accessories	Cylinder Liners—Type	Crankcase—Upper Half Integral with Cylinders	Valves: Arrangement	Valves: Exhaust Head Material (S.A.E. No.)	Valves: Max. Head Diameter (In.) Intake	Valves: Max. Head Diameter (In.) Exhaust	Valves: Min. Port Diameter (In.) Intake	Valves: Min. Port Diameter (In.) Exhaust	Valves: Lift (In.) Intake	Valves: Lift (In.) Exhaust	Valves: Stem Diameter (In.) Intake	Valves: Stem Diameter (In.) Exhaust
1	Lathrop... Standard	M	3-5³⁄₁₆x6½	...	27- 700	412.1	...	296- 600 (EA)	N	Se	Th	CNS	2.25	2.25	2.00	2.00	.375	.375	.437	.437
2	... Standard	M	3-5½x6½	...	34- 800	453.2	...	237- 700 (EA)	N	Se	Th	CNS	2.25	2.25	2.00	2.00	.375	.375	.437	.437
3	... LH	M	4-3¼x4	...	38-2200	133.0	...	92-2000 (EA)	N	In	L	CNS	...	...	1.25	1.12	.312	.312	.312	.312
4	... Standard	M	4-5³⁄₁₆x6½	...	29- 700	549.5	...	233- 500 (EA)	N	Se	Th	CNS	2.25	2.25	2.00	2.00	.375	.375	.437	.437
5	... Standard	M	4-5½x6½	...	49- 800	617.7	...	342- 600 (EA)	N	Se	Th	CNS	2.25	2.25	2.00	2.00	.375	.375	.437	.437
6	... Engineers	M	4-5½x7	...	64-1000	665.2	...	373- 650 (EA)	N	Se	L	CNS	2.68	2.50	2.31	2.12	.375	.375	.500	.500
7	... Engineers	M	4-6x7	...	76-1000	791.6	...	461- 700 (EA)	N	Se	L	CNS	2.68	2.50	2.31	2.12	.375	.375	.500	.500
8	... LH	M	6-3¾x4¼	...	62-2200	282.0	...	173- 550 (EA)	N	In	L	CNS	...	...	1.50	1.37	.312	.312	.375	.375
9	... De Luxe LH-D6	M	6-4x4¼	...	107-2500	320.0	...	226-2500 (EA)	N	In	L	CNS	1.75	1.62	1.50	1.37	.356	.356	.375	.375
10	... LH-Super	M	6-4x4½	...	132-3200	339.0	...	132-3200 (EA)	N	In	L	CNS	1.75	1.62	1.50	1.37	.375	.375	.375	.375
11	... Mystic	M	6-4½x5½	...	98-1600	524.8	...	321-1350 (EA)	N	Se	L	CNS	2.25	2.25	2.00	2.00	.375	.375	.437	.437
12	... Mystic	M	6-4¾x5½	...	106-1600	584.7	...	379- 900 (EA)	N	Se	L	CNS	2.25	2.25	2.00	2.00	.375	.375	.437	.437
13	... Mystic	M	6-5½x6½	...	155-1500	926.5	...	561-1200 (EA)	N	Se	L	CNS	2.68	2.68	2.31	2.31	.437	.437	.500	.500
14	... Mystic	M	6-5¾x6½	...	179-1600	1012.8	...	640-1100 (EA)	N	Se	L	CNS	2.68	2.68	2.31	2.31	.437	.437	.500	.500
15	... Engineers	M	6-6x7	...	118-1000	1187.5	...	650- 925 (EA)	N	Se	L	CNS	2.68	2.50	2.31	2.12	.375	.375	.500	.500
16	Le Roi... A288	Ind	1-7¼x7	...	26.5- 720	288.9	5.8	195- 500 (EA)	W	In	I	Sil	3.34	2.81	2.00	2.62	.530	.530	.622	.621
17	... B45	Ind	2-2⅞x3½	11.3-2200	10.4-2200	45.4	5.8	28-1400 (EA)	N	In	L	Sil	1.43	1.43	1.08	1.08	.187	.187	.312	.313
18	... D91	Ind,Tr	4-2⅞x3½	23.3-2200	22.2-2200	90.8	5.80	60-1500 (EA)	N	In	L	Sil	1.43	1.43	1.08	1.08	.188	.188	.312	.313
19	... D140	Ind,Tr	4-3½x3⅝	36.5-2400	33.5-2400	140.0	5.85	94-1300 (EA)	W	In	I	CNS	1.37	1.28	1.18	1.18	.375	.375	.343	.342
20	... D176	Ind,Tr	4-3¾x4	42.0-2000	40-2000	176.0	5.43	124-1200 (EA)	W	In	I	CNS	1.68	1.50	1.37	1.25	.373	.373	.372	.372
21	... D201	Ind,Tr	4-4x4	47.5-2000	45-2000	201.0	5.43	140-1200 (EA)	W	In	I	CNS	1.68	1.50	1.37	1.25	.373	.373	.372	.372
22	... D226	Ind,Tr	4-4x4½	54-2000	52-2000	226.0	5.09	167-1200 (EA)	W	In	I	CNS	1.68	1.50	1.37	1.25	.373	.373	.372	.372
23	... D471	Ind,Tr	4-5x6	78-1400	75-1400	471.0	5.15	320- 900 (EA)	W	In	I	CNS	1.87	1.81	1.75	1.62	.470	.470	.433	.433
24	... D1000	Ind	4-6¾x7	145-1200	140-1200	1002.0	4.50	690- 650 (EA)	N	Se	I	Sil	2.81	2.81	2.12	2.50	.625	.625	.624	.624
25	... F1500	Ind	6-6¾x7	215-1200	208-1200	1503.0	4.50	1035- 650 (EA)	N	Se	I	Sil	2.81	2.81	2.12	2.50	.625	.625	.624	.624
26	... H540	T,B,Tr,Ind	V8-4½x4¼	175-2400	171-2400	540.0	5.6	417- 900 (EA)	W	In	I	Sil	1.94	1.50	1.62	1.37	.410	.410	.373	.372
27	... H2000	Ind	V8-6¾x7	290-1200	278-1200	2004.0	4.50	1380- 650 (EA)	N	Se	I	Sil	2.81	2.81	2.12	2.50	.625	.625	.624	.624
28	... L3000	Ind	V12-6¾x7	435-1200	416-1200	3006.0	4.50	2075- 650 (EA)	N	Se	I	Sil	2.81	2.81	2.12	2.50	.625	.625	.624	.624
29	... L3460	Ind	V12-7¼x7	...	506-1350	3468.0	4.57	2570- 900 (EA)	W	In	I	Sil	3.34	2.81	2.75	2.62	.625	.625	.622	.621
30	Lycoming... D-290-G	Ind	4-4⅞x3⅞	...	90-2200	289.0	6.50	228-1800 (EA)	AF	Se	...	Aus	2.00	1.70	1.70	1.55	.402	.402	.402	.402
31	Mack... EN354A-Updraft	T	6-3⅞x5	119-2700	102-2700	354.0	5.50	246-1300 (EA)	N	In	L	xCHS	2.00	1.63	1.78	1.43	.430	.427	.435	.433
32	... EN354A-Downdraft	T	6-3⅞x5	121-2700	108-2700	354.0	5.50	257-1400 (EA)	N	In	L	xCHS	2.00	1.63	1.78	1.43	.430	.427	.435	.433
33	... EN431A	T	6-4⅛x5⅜	142-2500	124-2500	431.0	6.32	311-1200 (EA)	N	In	I	xCHS	2.04	1.75	1.81	1.56	.418	.418	.435	.433
34	... EN471A	T	6-4⁵⁄₁₆x5⅜	150-2400	134-2400	471.0	6.12	360-1000 (EA)	N	In	I	xCHS	2.04	1.75	1.81	1.56	.418	.418	.435	.433
35	... EN510A	T	6-4⁷⁄₁₆x5½	158-2400	140-2400	510.0	6.07	383-1000 (EA)	N	In	I	xCHS	2.04	1.75	1.81	1.56	.418	.418	.435	.433
36	... EN510A	B	6-4⁷⁄₁₆x5½	158-2400	139-2400	510.0	6.07	366-1000 (EA)	N	In	I	CHS	2.04	1.75	1.81	1.56	.418	.418	.435	.433
37	... ENF510A	FA	6-4⁷⁄₁₆x5½	161-2550	150-2550	510.0	6.34	398-1200 (EA)	N	In	I	xCHS	2.04	1.75	1.81	1.56	.418	.418	.435	.433
38	... EN672	B	6-4⅞x6	187-2400	165-2000	672.0	6.15	490-1150 (EA)	D	In	I	CHS	2.27	1.96	2.04	1.76	.314	.314	.498	.496
39	... EN707A-Downdraft	T	6-5x6	196-2000	179-2000	707.0	6.10	544-1100 (EA)	N	In	I	xCHS	2.27	1.96	2.04	1.76	.314	.314	.498	.496
40	... EN707A-Updraft	T	5-5x6	191-2000	166-2000	707.0	6.10	538-1100 (EA)	N	In	I	xCHS	2.27	1.96	2.04	1.76	.314	.314	.498	.496
41	... ENF707A	FA	6-5x6	209-2250	199-2250	707.0	6.10	561-1200 (EA)	N	In		xCHS	2.27	1.96	2.04	1.76	.314	.314	.498	.496
42	Minneapolis-Moline... 165-4	Ind,Tr	4-3⅝x4	26-1400	25-1400	165.1	5.75	106-1000 (BE)	N	Se	Hh	...	1.46	1.46	1.25	1.25	.355	.355	.341	.341
43	... 206A-4	Ind,Tr	4-3⅝x5	40-1600	38-1500	206.5	6.15	162-1100 (BE)	N	Se	Hh	...	1.46	1.46	1.25	1.25	.355	.355	.341	.341
44	... 283-4	Ind,Tr	4-4¼x5	51-1300	48-1300	283.7	5.40	210-1100 (BE)	N	Se	I	...	1.72	1.59	1.50	1.37	.490	.490	.434	.434
45	... 403-4	Ind,Tr	4-4⅝x6	67-1200	64-1200	403.2	5.40	304-1100 (BE)	N	Se	I	...	1.84	1.72	1.62	1.50	.490	.490	.434	.434
46	... 425-6	Ind	6-4¼x5	81-1350	74-1350	425.5	5.40	318- 900 (BE)	N	Se	I	...	1.72	1.59	1.50	1.37	.490	.490	.434	.434
47	... 605-6	Ind	6-4⅝x6	98-1200	93-1200	605.0	5.40	446- 800 (BE)	N	Se	I	...	1.84	1.72	1.62	1.50	.490	.490	.434	.433
48	... 1210-12A	Ind	12-4⅝x6	210-1300	198-1300	1210.0	5.40	870- 900 (BE)	N	Se	I	...	1.84	1.72	1.62	1.50	.490	.490	.434	.434
49	Norberg... 230	M	6-3⁷⁄₁₆x4⅛	...	90-3000	230	6.90	178-2000	N	In	L	...	1.43	1.25	...	...	.211	.305	.310	.310
50	... 320	M	6-4x4¼	...	103-2400	320	6.50	246-1600	N	In	L	...	1.50	1.37	...	...	.209	.351	.372	.372
51	... 340	M	6-4x4½	...	135-3000	330	7.10	268-2200	N	In	L	...	1.71	1.56	...	...	.207	.351	.372	.372
52	Oliver... 66HC	Tr	4-3⁵⁄₁₆x3¾	...	...	129.3	6.75	...	W	In	I	Sil	1.31	1.12	1.18	.995	.312	.281	.372	.371
53	... 90	Tr	4-4¾x6¼	...	66.7-1125	443.0	4.10	250- 850 (EA)	W	In	I	Sil	2.31	2.31	2.00	2.00	.437	.437	.437	.437
54	... 99	Tr	4-4¾x6¼	...	65-1125	443.0	5.04	296- 850 (EA)	W	In	I	Sil	2.31	2.00	2.00	1.75	.437	.437	.437	.437
55	... 77HC	Tr	6-3⁵⁄₁₆x3¾	...	35.3-1600	193.9	6.75	...	W	In	I	Sil	1.31	1.12	1.18	.995	.312	.281	.372	.371
56	... 88HC	Tr	6-3½x4	...	44.9-1600	231.0	6.75	...	W	In	I	Sil	1.40	1.28	1.25	1.12	.350	.362	.372	.371
57	Packard... 1M-245	M	6-3½x4¼	...	100-3200	245.0	7.00	185-1600 (EA)	N	In	L	Aus	1.67	1.43	1.56	1.31	.318	.318	.342	.340
58	... 1M-356	M	8-3½x4⅝	...	150-3200	356.0	7.00	266-2200 (EA)	N	In	L	Aus	1.67	1.43	1.56	1.31	.342	.342	.342	.340
59	Reo... GC-245	T,B	6-3½x4¼	89-3100	...	245.0	6.20	191-1200 (BE)	N	In	L	2112	1.78	1.62	...	...	.312	.312	.373	.371
60	... GC-288	T,B	6-3½x5	98-3000	...	288.0	6.20	225-1200 (BE)	N	In	L	2112	1.78	1.62	...	...	.312	.312	.373	.371
61	... GC-310	T,B	6-3⅝x5	101-3000	...	310.0	6.20	243-1000 (BE)	N	In	L	2112	1.78	1.62	...	...	.312	.312	.373	.371
62	... OA	T,B	6-4⅛x4⅛	140-3200	128-3200	331.0	6.40	260-2200 (EA)	W	In	I	(x)Sil	2.01	1.80	...	...	.300	.300	.435	.434
63	... OA	T,B	6-3⅞x4⅛	124-3300	110.5-3300	292.0	6.90	218-1200 (EA)	W	In	I	(x)Sil	2.01	1.80	...	...	.300	.300	.435	.434
64	Scripps... 34	M	4-3¼x4	...	32-2200	134.0	5.90	92-2000 (EA)	...	In	L	Sil	1.48	1.35	1.25	1.12	.250	.250	.310	.310
65	... 36	M	4-3¼x4	...	50-3200	134.0	5.60	92-2000 (EA)	...	In	L	Sil	1.48	1.35	1.25	1.12	.250	.250	.310	.310
66	... 96-97	M	6-3⅜x4⅛	...	95-3000	221.0	5.85	167-1200 (BE)	...	In	L	Sil	1.60	1.39	1.43	1.12	.281	.281	.312	.312
67	... 104-105	M	6-4x4¼	...	110-3000	320.0	5.63	239-1700 (BE)	...	In	L	Sil	1.75	1.62	1.50	1.37	.322	.322	.373	.373
68	... 6-339	M	6-4x4½	...	140-3200	339.0	6.8	265-2000	...	In	L	Sil	1.83	1.67	1.72	1.50	.356	.356	.373	.373
69	... 152-153	M	6-4¼x5¼	...	169-3000	447.0	6.20	...	...	Se	L	Sil	2.25	2.25	...	...	.375	.375	.437	.437
70	... 184, 5, 6, 7	M	6-4¼x5¼	...	155-3000	447.0	6.20	...	...	Se	L	Sil	2.25	2.25	...	...	.375	.375	.437	.437
71	... 168-169	M	6-4½x5¾	...	175-2400	549.0	5.75	...	...	Se	L	Sil	2.37	2.28	...	...	.406	.375	.437	.437
72	... 178-179	M	6-4¾x5¾	...	200-2400	611.0	5.75	...	...	Se	L	Sil	2.37	2.28	...	...	.406	.375	.437	.437
73	... 208-209	M	6-5x5¾	...	225-2400	678.0	5.86	...	...	Se	L	Sil	2.50	2.37	...	...	.406	.375	.437	.437
74	... V43M-100, V47M-100	M	8-3.18x3¾	...	100-3600	239.0	6.15	176-2200 (BE)	...	In	L	CNS	1.53	1.53	...	...	.292	.292	.311	.311
75	... 302-303	M	12-4¼x5¼	...	304-2400	894.0	6.20	...	...	Se	L	Sil	2.25	2.25	...	...	.375	.375	.437	.437
76	... 304-305	M	12-4¼x5¼	...	250-2400	894.0	6.20	...	...	Se	L	Sil	2.25	2.25	...	...	.375	.375	.437	.437
77	... 306-307	M	12-4¼x5¼	...	280-2400	894.0	6.20	...	...	Se	L	Sil	2.25	2.25	...	...	.375	.375	.437	.437
78	Sterling... Viking II-TC-6	Tr,Ind	6-8x9	...	480-1200	2714.0	▲	2015- 900 (EA)	W	Se	I	Sil	2.50	2.50	...	...	.556	.556	.557	.557
79	... Viking II-TC-6	Tr,Ind	6-8x9	...	345- 900	2714.3	▲	2015- 900 (EA)	W	Se	I	Sil	2.50	2.50	...	...	.556	.556	.557	.557
80	... Viking II-T-3	M	8-8x9	...	600-1200	3619.0	6.20	2685- 900 (EA)	W	Se	I	Sil	2.50	2.50	...	...	.556	.556	.557	.557
81	... Viking II-TC-8	Tr,Ind	8-8x9	...	600-1200	3619.0	▲	2685- 900 (EA)	W	Se	I	Sil	2.50	2.50	...	...	.556	.556	.557	.557
82	... Viking II-TC-8	Tr,Ind	8-8x9	...	460- 900	3619.0	▲	2685- 900 (EA)	W	Se	I	Sil	2.50	2.50	...	...	.556	.556	.557	.557
83	... Petrel-LC-6	Ind	6-5¼x6	...	210-2000	780.0	6.00	550-1700 (EA)	N	Se	L	Sil	2.25	2.25	...	...	.475	.475	.437	.437
84	... Petrel-L-6	M	6-5¼x6	...	266-2500	780.0	6.00	550-1700 (EA)	N	Se	L	Sil	2.25	2.25	...	...	.583	.583	.437	.437

For abbreviations, see pages 150 and 151

For Directory of the Manufacturers listed above, see page 63.

ENGINES—*Continued*

Valves: Seats: Angle (Deg.)	Valves: Seats: Inserts Used?	Valves: Seats: Insert Material (S.A.E. No.)	Camshaft Drive—Type	Pistons: Material	Pistons: Weight with Pins, Rings, Bushings (Oz.)	Pistons: Piston Pin—Diameter and Length (In.)	Number of Rings per Piston	Connecting Rods: Material	Connecting Rods: Center to Center Length (In.)	Connecting Rods: Weight with Bushing and Cap (Oz.)	Crankshaft: Material	Crankshaft: Counter Balance Used	Crankshaft: Crank-Pin: Diameter and Length (In.)	Crankshaft: Main Bearings: Number	Crankshaft: Main Bearings: Diameter and Length (In.): Front	Crankshaft: Main Bearings: Diameter and Length (In.): Rear	Oil Pressure to—	Carburetor: Make	Carburetor: Size	Engine Weight without Carburetor or Ignition (Lb.)	Overall Dimensions (In.): Width	Overall Dimensions (In.): Height	Overall Dimensions (In.): Length	Clutch Housing (S.A.E. Nos.)	Line Number
47	......	......	HG	CI	160	1.37x4.62	4	AS	12¼	96	CNS	N	1.87x2.75	4	2.25x5.00	2.25x4.00	acg	Zen	1½	1400	25	22¼	60½	......	1
45	......	......	HG	CI	179	1.37x5.00	4	AS	12¼	96	CNS	N	1.87x2.75	4	2.25x5.00	2.25x4.00	acg	Zen	1½	1450	25	22¼	60½	......	2
30	......	......	HG	Al	......	.750x2.81	3	AS	6 1/16	......	CNS	N	.87x2.75	4	......	......	acg	Zen	1	440	17¼	14¾	40½	......	3
45	......	......	HG	CI	160	1.37x4.62	4	AS	12¼	96	CNS	N	2.00x1.50	3	2.00x2.18	2.00x2.62	acg	Zen	1½	1700	25¾	22¼	66½	......	4
45	......	......	HG	CI	179	1.37x5.00	4	AS	12¼	96	CNS	N	1.87x2.75	5	2.25x5.00	2.25x4.00	acg	Zen	1½	1750	25¾	22¼	66½	......	5
45	E	Spec	HG	CI	186	1.50x5.00	4	AS	13¼	172	CNS	N	1.87x2.75	5	2.25x5.00	2.25x4.00	......	Zen	....	2100	29¼	24	74¾	......	6
45	E	Spec	HG	CI	204	1.50x5.50	4	AS	13¼	172	CNS	N	2.75x2.75	5	3.00x3.50	3.00x3.50	acdg	Zen	....	2290	29¼	24	75	......	7
30	......	......	HG	Al	......	1.00x3.50	3	AS	8	......	CNS	N	2.75x2.75	5	3.00x3.50	3.00x3.50	acdg	Zen	1¼	630	21½	17	51	......	8
30	E	Spec	HG	Al	40	1.00x3.50	4	DFS	8	38	Spec	N	2.00x1.50	7	2.50x1.31	2.50x2.12	acg	Zen	1½	820	21½	25	51	......	9
30	......	......	HG	Al	98	1.37x3.87	4	Dur	8	38	CNS	...	2.00x1.50	7	2.50x1.31	2.50x2.12	abcdeg	Zen	1¼	840	21½	25	47	......	10
45	......	......	HG	CI	98	1.37x3.87	4	Dur	12¼	68	CNS	N	2.00x1.50	7	2.50x1.31	2.50x1.12	acg	Hol	....	1700	24½	27¾	88	......	11
45	......	......	HG	CI	104	1.37x4.12	4	Dur	12¼	68	CNS	N	2.25x2.37	7	2.75x3.25	2.75x2.12	acdg	Hol	....	1700	24½	27¾	88	......	12
45	......	......	HG	CI	176	1.50x5.00	4	AS	13¼	104	CNS	N	2.12x2.75	7	2.62x5.00	2.62x4.00	acg	Hol	....	2435	24½	29¾	78½	......	13
45	......	......	HG	CI	176	1.50x5.12	4	AS	13¼	104	CNS	N	2.75x2.75	7	3.00x3.37	3.00x3.25	acdg	Hol	....	2460	24½	29¾	78½	......	14
45	E	Spec	HG	CI	204	1.50x....	4	AS	13¼	172	CNS	N	2.75x2.75	7	3.00x3.50	3.00x3.50	abcdg	Zen(2)	1¾	2950	31½	24	92	......	15
45	E	T-12	HG	Al	256	2.25x6.12	4	1040	15	338	1040	Y	5.00x2.15	2	5.00x2.15	5.00x2.15	abcdf	Own	1¾	2275	57¾	49	40 11/16	3	16
45	N	......	HG	Al	11¾	.750x2.46	3	1040	6½	24	ACI	Y	1.93x1.37	2	310 (9)	310 (9)	PS	Zen	⅝	250	16¾	19 1/16	17	4	17
45	N	......	HG	Al	11¾	.750x2.46	3	1040	6½	24	1040	Y	1.93x1.37	2	310 (9)	310 (9)	PS	Zen	⅝	350	16¾	19 1/16	24	4	18
45	E	T-12	HG	Al	46	1.00x2.93	3	1040	7½	33	1045	Y	2.31x1.06	3	2.50x1.43	2.50x1.43	acdf	Zen	¾	550	16¾	31½	33	4, 5	19
45	E	T-12	HG	ACI	54	1.00x3.31	4	1045	7½	60	1045	Y	2.37x1.50	3	2.43x1.62	2.46x1.75	acdf	Zen	1	500	20	30	38½	4	20
45	E	T-12	HG	Al	34	1.00x3.43	4	1045	7½	60	1045	Y	2.37x1.50	3	2.43x1.62	2.46x1.75	acdf	Zen	1	590	20	31	38½	4, 2	21
45	E	T-12	HG	Al	34	1.00x3.43	4	1045	8	60	1045	Y	2.37x1.50	3	2.43x1.62	2.61x1.75	acdf	Zen	1	580	20	30	38½	4, 2	22
45	E	T-12	HG	Al	......	1.50x4.31	4	1040	12	......	1045	Y	2.87x2.37	3	3.00x3.12	3.00x4.12	acdf	Zen	1¼	1645	23	43½	45½	1	23
45	E	T-12	HG	Al	200	1.75x6.12	4	1045	14	238	1045	N	3.50x3.75	3	3.93x5.25	3.93x5.25	acdf	Zen	1¾	2500	34	59	62	00, 0	24
45	E	T-12	HG	Al	200	1.75x6.12	4	1045	14	238	4140	N	3.50x3.75	4	3.93x5.25	3.93x5.25	acdf	Zen(2)	1½	3750	34	59	80	00, 0	25
45	E	T-12	HG	Al	62	1.25x3.93	4	1040	8½	52	4140	Y	2.75x1.25	5	3.25x1.12	3.25x1.12	acdf	Zen(2)	1¼	1300	30¾	39¾	37	1, 2	26
45	E	T-12	HG	Al	200	1.75x6.12	4	3140	15	**	1045	Y	3.50x3.75	3	3.93x5.25	3.93x5.25	acdf	Zen(2)	2	3900	45	65	64	00	27
45	E	T-12	HG	Al	200	1.75x6.12	4	3140	15	**	4140	N	3.50x3.75	4	3.93x5.25	3.93x5.25	acdf	Zen(4)	1¾	5300	45	66	76	00	28
45	E	T-12	HG	Al	256	2.25x6.37	4	1040	15	338	4140	Y	5.00x2.18	6	5.50x2.37	5.50x4.31	abcdf	Zen(4)	2	10300	49	75	98¾	00	29
(h)	Bo	Aus	BG	Alt	51	1.12x4.44	4	6322	6½	32	6415	N	2.12x1.44	3	2.38x5.11	2.38x1.00	acde	MaS	1 1/16	306	32.24	26.07	39.06	......	30
(h)	E	Nif	HG	Alt	41	1.00x3.40	5	4130	11¼	61△	1046	....	2.37x1.34	7	3.00x1.56	3.00x2.56	acdeg	Zen	1¾	985	27.27	37.71	46.46	3	31
(h)	E	Nif	HG	Alt	41	1.00x3.40	5	4130	11¼	61△	1046	....	2.37x1.34	7	3.00x1.56	3.00x2.56	acdeg	Zen‡	1¼	985	27.27	37.71	46.46	3	32
(h)	E	Nif	HG	Alt	59	1.31x3.56	5	4130	10½	90△	1046	....	2.75x1.72	7	3.50x1.68	3.50x2.21	acdefg	Zen	1¾	1525	27.00	44.18	49.87	2, 3	33
(h)	E	Nif	HG	Alt	64	1.31x3.83	5	4130	10½	90△	1046	....	2.75x1.71	7	3.50x1.68	3.50x2.21	acdefg	Zen	1¾	1600	28.25	43.75	49.87	2	34
(h)	E	Nif	HG	Alt	68	1.31x3.91	5	4130	10½	90△	1046	....	2.75x1.71	7	3.50x1.68	3.50x2.21	acdefg	Zen	1¾	1555	28.25	43.75	49.87	2	35
(h)	E	Nif	HG	Alt	68	1.31x3.91	5	4130	10½	90△	1046	....	2.75x1.71	7	3.50x1.62	3.50x2.21	acdefg	Zen	1¾	1555	29.50	43.50	47.13	2	36
(h)	E	Nif	HG	Alt	68	1.31x3.91	5	4130	10½	90△	1046	....	2.75x1.71	7	3.50x1.68	3.50x2.21	acdefg	Zen	1¾	1594	28.25	45.18	49.87	2	37
(h)	E	Nif	HG	Alt	87	1.43x4.18	5	4130	11¼	113△	1046	....	3.00x1.90	7	4.00x1.57	4.00x2.25	acdefg	Zen‡	1⅝	1696	30‡	56¾‡	49‡	1	38
(h)	E	Nif	HG	Alt	89	1.43x4.43	5	4130	11¼	113△	1046	....	3.00x1.90	7	4.00x1.57	4.00x2.25	acdefg	Hol‡	1⅝	1803	28.06	51.75	53 1/16‡	1	39
(h)	E	Nif	HG	Alt	89	1.43x4.43	5	4130	11¼	113△	1046	....	3.00x1.90	7	4.00x1.57	4.00x2.25	acdefg	Zen	1⅝	1803	28.06	51.75	53 1/16‡	1	40
(h)	E	Nif	HG	Alt	89	1.43x4.43	5	4130	11¼	113△	1046	....	3.00x1.90	7	4.00x1.57	4.00x2.25	acdefg	Zen‡	1⅝	1854	28.06	51.75	53 1/16‡	1△	41
45	E	ACI	HG	CI	56	1.00x3.00	4	DFS	9	54	DFS	N	2.62x1.28	2	SAE212(7)	3.00x2.18	acegt	MaS	1	x600	25¾	32 1/16	37 1/16	4	42
45	E	ACI	HG	CI	54	1.00x3.00	4	DFS	8¾	45	DFS	N	2.62x1.28	3	SAE212(7)	3.00x2.18	acegt	MaS	1	x670	25¾	32 1/16	37⅛	4	43
45	E	ACI	HG	CI	85	1.25x3.87	4	DFS	10	90	DFS	N	2.57x2.22	3	2.91x2.18	2.91x3.50	acdefgt	MaS	1¼	u1150	25¾	41 11/16	48 1/16	2	44
45	E	ACI	HG	CI	101	1.25x4.12	4	DFS	11¼	88	DFS	N	2.75x2.09	3	2.91x2.18	2.91x3.50	acdefgt	MaS	1¼	u1250	25¾	47⅝	45 1/16	2	45
45	E	ACI	HG	CI	85	1.25x3.87	4	DFS	10	90	DFS	Y	2.57x2.22	4	2.91x2.18	2.91x3.50	acdefgt	Zen	1½	u1800	28¾	45 1/16	59¼	1	46
45	E	ACI	HG	CI	108	1.25x4.25	4	DFS	11¼	91	DFS	Y	2.75x2.09	4	2.91x2.18	2.91x3.50	acdefgt	Zen	1½	u1900	28¾	48 1/16	59¼	1	47
45	E	ACI	HG	CI	108	1.25x4.25	4	DFS	11¼	91	DFS	Y	2.75x2.09	4	2.91x2.18	2.91x3.50	acdefgt	Ens	1½	6150	48¾	71 11/16	111¾	......	48
30	N	......	HG	Al	......	.875x1.81	4	1035	7	......	3140‡	N	2.00x1.25	7	2.50x1.31	2.50x1.93	ar**	Zen	1½	720	25	23⅛	45⅝	Spec.	49
30	N	......	HG	Al	......	1.00x2.43	4	1040	8	......	1045‡	N	2.00x1.50	7	2.50x1.31	2.50x2.12	ar**	Zen	1½	830	25	25	49½	Spec.	50
30	N	......	HG	Al	......	1.12x3.25	4	1035	8	......	1045‡	N	2.00x1.50	7	2.50x1.31	2.50x2.12	ar**	Str	1¾	800	25	25	49½	Spec.	51
45	N	CA	HG	CI	61¾	1.25x2.75	4	1045	6¾	31½	1045	N	2.00x1.37	3	2.25x1.75	2.25x1.62	acdfg	MaS	1	461	18	27⅞	30⅞	......	52
45	E	CA	HG	CI	109	1.50x4.37	4	1040	12½	145	1045	N	2.75x2.50	3	3.00x2.81	3.00x3.75	abcdg	MaS	1¼	1200	24¼	44	44¼	......	53
45	E	CA	HG	CI	109	1.50x4.37	4	1040	12½	145	1045	N	2.75x2.50	3	3.00x2.81	3.00x3.75	abcdg	MaS	1¼	1200	24¼	44	44¼	......	54
45	N	CA	HG	CI	61¾	1.25x2.75	4	1045	6¾	31½	10°5	N	2.10x1.37	4	2.25x1.75	2.25x1.62	acdfg	MaS	1	602	18	29 1/16	30⅞	......	55
45	N	CA	HG	CI	72	1.25x2.75	4	1045	6¾	40	1045	N	2.25x1.37	4	2.62x1.87	2.62x1.75	acdfg	MaS	1	604	18	31¾	41½	......	56
(h)	N	......	Ch	Al	25½	.875x3.01	3	DFS	7 11/16	35	SF	Y	2.25x1.31	4	2.75x1.69	2.75x2.06	abcdgr	Zen	1⅝	......	25	28	51	......	57
(h)	N	......	Ch	Al	25½	.875x3.01	3	DFS	9¼	39	SF	Y	2.25x1.37	9	2.75x1.34	2.75x2.06	abcdgr	Str	2	......	27	29	59	......	58
45	E	......	Ch	Al	26	.983x3.03	4	1038	10½	50	5046	Y	2.19x1.50	7	2.62x1.94	2.62x2.47	abcdg	Zen	1¼	763*	19¼	30¼	38¾	......	59
45	E	......	Ch	Al	26	.983x3.03	4	1038	10½	50	5046	Y	2.19x1.50	7	2.62x1.94	2.62x2.47	abcdg	Zen	1½	780*	19¼	30⅝	38¾	......	60
45	E	......	Ch	Al	29	.983x3.13	4	1038	10½	50	5046	Y	2.19x1.50	7	2.62x1.94	2.62x2.47	abcdg	Zen	1½	785*	19¼	30⅝	38¾	......	61
60	E	St	HG	Al	40	1.12x3.50	4	1038	7¼	56	1045	...	2.18x1.62	7	2.51x1.62	2.51x1.62	acdf	Zen	1¼	872	25½	34 1/16	46 11/16	3	62
60	E	St	HG	Al	34.7	1.12x3.50	4	1038	7¼	56	1045	...	2.18x1.62	7	2.51x1.62	2.51x1.62	acdf	Zen	1¼	830	25½	34 1/16	41 11/16	3	63
30	......	......	HG	CI	29	.750x2.81	3	3140	6 1/16	21	1045	N	1.75x1.12	3	2.00x1.56	2.00x1.62	acr	Zen	1¼	410*	15½	21¾	32¾	6	64
30	......	......	HG	Al	......	.750x2.81	3	AS	6 1/16	21	1045	N	1.75x1.12	3	2.00x1.56	2.00x1.62	acr	Zen	1¼	410*	15½	21¾	32¾	6	65
30	......	......	HG	Al	......	.875x2.90	4	CS	7	29	CS	N	2.00x1.25	...	2.50x1.31	2.50x1.93	acr	Zen	1½	675*	21	23¼	41½	4	66
45	......	......	HG	Al	40	1.00x3.51	4	1035	8	37	1045	N	2.00x1.50	7	2.50x1.31	2.50x2.12	acr	Zen	1¾	860*	21	26½	48¾	4	67
30	......	......	HG	Al	49	1.12x3.44	4	AS	8	39.2	CS	Y	2.00x1.50	4	2.50x1.31	2.50x2.12	acd	Zen	2	860*	21	26½	48¾	4	68
45	E	Tun	HG	Al	49	1.25x3.68	4	AS	10⅞	70	NS	Y	2.75x2.25	4	3.25x2.25	3.25x2.25	acd	Hol	2	1050*	27¾	32 1/16	56¾	......	69
45	E	Tun	HG	Al	49	1.25x3.68	4	AS	10⅞	70	NS	Y	2.75x2.25	4	3.25x2.25	3.25x2.25	acd	Str	2	1150*	24¾	29⅞	56¾	......	70
45	......	......	HG	Al	50	1.37x3.84	4	AS	11¼	84	NS	Y	2.87x2.00	4	3.00x3.00	3.00x3.62	ac	Zen	2	1325*	33½	33 1/16	66	......	71
45	......	......	HG	Al	56	1.37x4.00	4	AS	11¼	84	NS	Y	2.87x2.00	4	3.00x3.00	3.00x3.62	ac	Hol	2	1325*	33½	33 1/16	66	......	72
45	......	......	HG	Al	56	1.37x4.00	4	AS	11¼	85	CS	Y	2.87x2.25	4	3.00x3.00	3.00x3.62	acr	Zen(2)	2	1325*	25	33 1/16	66	......	73
45	Bo	Tun	HG	CAS	......	.750x2.84	3	DFS	7	18	CAS	Y	2.14x1.75	3	2.50x1.37	2.00x1.96	acd	Hol	1	700*	23½	32⅞	43 1/16	......	74
45	......	......	HG	Al	49	1.25x3.68	4	AS	10⅞	104¼	NS	Y	2.75x2.25	4	3.25x2.25	3.25x2.25	acd	Hol	2	1700*	35	33½	58½	......	75
45	......	......	HG	Al	49	1.25x3.68	4	AS	10⅞	104¼	NS	Y	2.75x2.25	4	3.25x2.25	3.25x2.25	acd	Str(2)	....	1700*	33¼	30 1/16	58½	......	76
45	......	......	HG	Al	49	1.25x3.68	4	AS	10⅞	104¼	NS	Y	2.75x2.25	4	3.25x2.25	3.25x2.25	acd	Str(2)	2	1700*	33¼	30 1/16	58½	......	77
45	E	T-12	Ch	Al	328	2.00x7.00	4	CS	18	416	CNS	Y	4.00x3.12	9	4.00x3.37	4.00x5.50	abcdeg	Zen(4)	2½	7500	45	64⅞	100⅞	......	78
45	E	T-12	Ch	Al	328	2.00x7.00	4	CS	18	416	CNS	Y	4.00x3.12	9	4.00x3.37	4.00x5.50	abcdeg	Zen(4)	2½	7500	45	64⅞	100⅞	......	79
45	E	T-12	Ch	Al	328	2.00x7.00	4	CS	18	416	CNS	Y	4.00x3.12	9	4.00x3.37	4.00x5.50	abcdeg	Zen(4)	2½	8900	44 1/16	61⅝	142¾	......	80
45	E	T-12	Ch	Al	328	2.00x7.00	4	CS	18	416	CNS	Y	4.00x3.12	9	4.00x3.37	4.00x5.50	abcdeg	Zen(4)	2½	9000	45	64⅞	121¾	......	81
45	E	T-12	Ch	Al	328	2.00x7.00	4	CS	18	416	CNS	Y	4.00x3.12	9	4.00x3.37	4.00x5.50	abcdeg	Zen(4)	2½	9000	45	64⅞	121¾	......	82
45	E	T-12	HG	Al	91	1.43x4.37	5	1035	12½	113	CNS	....	2.50x2.12	7	3.00x1.75	3.00x2.87	abcdeg	Zen(2)	1¾	2300	33	41½	59½	1	83
45	E	T-12	HG	Al	91	1.43x4.37	5	1035	12½	113	CNS	....	2.50x2.12	7	3.00x1.75	3.00x2.87	abcdeg	Zen(2)	1¾	1900	33	34½	73¾	......	84

For abbreviations, see pages 150 and 151

For Directory of the Manufacturers listed above, see page 63.

AMERICAN GASOLINE

Line Number	Engine Make and Model	Designed for	Number of Cylinders, Bore and Stroke (In.)	Maximum Brake Hp. at Specified R.P.M.: With Bare Engine	Maximum Brake Hp. at Specified R.P.M.: With Standard Accessories	Piston Displacement (Cu. In.)	Compression Ratio	Maximum Torque at R.P.M. (Lb. Ft.) with or without Accessories	Cylinder Liners—Type	Crankcase—Upper Half Integral with Cylinders	Valves: Arrangement	Valves: Exhaust Head Material (S.A.E. No.)	Valves: Max. Head Diameter (In.): Intake	Valves: Max. Head Diameter (In.): Exhaust	Valves: Min. Port Diameter (In.): Intake	Valves: Min. Port Diameter (In.): Exhaust	Valves: Lift (In.): Intake	Valves: Lift (In.): Exhaust	Valves: Stem Diameter (In.): Intake	Valves: Stem Diameter (In.): Exhaust
1	Thorobred........KK	M	2-3 3/4x4 3/4	11-1100	10-1100	105.0	4.00	84- 900 (EA)	N	Se	L	NCI	1.62	1.62	1.43	1.43	.300	.300	.375	.375
2	........Meteor CK	M	4-2 1/2x3 1/8	18-2800	16-2800	61.3	5.70	40-1700 (BE)	N	Se	L	Sil	1.12	.937	1.00	.812	.228	.250	.312	.312
3	........DS	M	4-2 3/4x4	19-1800	16-1800	95.0	4.66	53-1300 (EA)	N	In	L	Sil	1.46	1.34	1.31	1.18	.250	.250	.312	.312
4	........Arrowhead, Jr.	M	4-3 1/4x4	38-2800	35-2800	133.0	5.50	92-1200 (EA)	N	In	L	Sil	1.34	1.34	1.18	1.18	.281	.281	.312	.312
5	........Arrowhead	M	4-3 5/8x4 1/2	43-2200	37-2200	186.0	5.50	128- 900 (EA)	N	In	L	Sil	1.56	1.56	1.37	1.37	.281	.281	.375	.375
6	........AA	M	4-3 3/4x4 3/4	27-1400	24-1400	210.0	4.00	113- 700 (EA)	N	Se	L	NCI	1.62	1.62	1.43	1.43	.300	.300	.375	.375
7	........F	M	4-4 1/16x5	39-1400	36-1400	259.0	4.00	142-1000 (EA)	N	Se	L	NCI	1.93	1.93	1.75	1.75	.300	.300	.375	.375
8	........B	M	4-4 1/2x5	47-1800	44-1800	318.0	4.00	180- 900 (EA)	N	Se	L	CNS	2.09	2.09	1.93	1.93	.300	.300	.375	.375
9	........BB-4	M	4-4 1/2x6	89-1800	86-1800	382.0	4.00	224-1100 (EA)	N	Se	L	Sil	2.34	2.34	2.12	2.12	.300	.300	.437	.437
10	........BC-4	M	4-5x7	90-1200	86-1200	550.0	4.00	292- 900 (EA)	N	Se	L	Dia	2.75	2.75	2.37	2.37	.375	.375	.625	.625
11	........BCS-4	M	4-5 3/4x7	75-1100	71-1100	727.0	4.00	409- 900 (EA)	N	Se	L	Dia	2.75	2.75	2.37	2.37	.375	.375	.625	.625
12	........BC-Super-4	M	4-6x7	82-1100	78-1100	791.7	4.00	465- 700 (EA)	N	Se	L	Dia	2.75	2.75	2.37	2.37	.375	.375	.625	.625
13	........Hiawatha Spec.	M	6-4x4 1/4	86-2800	83-2800	320.0	5.75	210-1000 (BE)	N	In	L	Sil	1.68	1.43	1.50	1.25	.375	.375	.375	.375
14	........Arrow-Super-6	M	6-4 1/4x4 3/4	98-2500	95-2500	404.0	5.38	286- 800 (EA)	N	In	L	Sil	1.93	1.43	1.75	1.25	.375	.375	.375	.375
15	........BB-6	M	6-4 1/2x6	84-1725	80-1725	572.5	4.00	379- 900 (EA)	N	Se	L	Sil	2.34	2.34	2.12	2.12	.300	.300	.437	.437
16	........BBS-6	M	6-5x6	106-1500	101-1500	707.0	4.00	420- 900 (EA)	N	Se	L	Sil	2.34	2.34	2.12	2.12	.300	.300	.437	.437
17	........BC-6	M	6-5x7	94-1100	90-1100	825.0	4.00	452-1000 (EA)	N	Se	L	Dia	2.75	2.75	2.37	2.37	.375	.375	.625	.625
18	........BCS-6	M	6-5 3/4x7	116-1100	112-1100	1091.0	4.00	596- 850 (EA)	N	Se	L	Dia	2.75	2.75	2.37	2.37	.375	.375	.625	.625
19	........BC-Super-6	M	6-6x7	128-1100	124-1100	1187.5	4.00	630- 875 (EA)	N	Se	L	Dia	2.75	2.75	2.37	2.37	.375	.375	.625	.625
20	Twin Coach........FTC-180	B	6-4 1/4x4 3/4	180-2800	162-2800	404.0	7.50	380-1000 (EA)	D	In	I	Sil	1.77	1.60	1.62	1.50	.375	.375	.373	.373
21	Universal........Fisherman-WM	M	1-4 3/8x4 1/2	....	8-1200	67.6	5.02	....	N	In	L	Sil	1.87	1.87	1.62	1.62	.250	.250	.375	.375
22	........Blue Jacket-AFTL	M	2-3x3 1/2	....	12-2200	49.5	5.79	....	N	In	L	Sil	1.68	1.68	1.50	1.50	.250	.250	.375	.375
23	........Atomic Four-UJ	M	4-2 7/16x3 1/2	....	25-3500	64.5	6.32	....	N	In	L	Sil	1.21	1.03	1.06	.875	.240	.240	.312	.312
24	........Utility Four-BN	M	4-2 3/4x4	....	26-2500	95.0	4.70	....	N	In	L	Sil	1.25	1.25	1.12	1.12	.234	.234	.312	.312
25	........Blue Jacket Flexifour-BFA	M	4-3x3 1/2	....	45-3800	99.0	6.54	....	N	In	L	Sil	1.68	1.68	1.50	1.50	.312	.312	.375	.375
26	........Superfour-LSG	M	4-3 1/4x4 1/2	....	50-3000	149.3	5.70	....	N	Se	L	Sil	1.56	1.56	1.37	1.37	.312	.312	.375	.375
27	........Blue Jacket Six-AMS	M	6-3x3 1/2	....	60-3500	148.5	6.54	....	N	In	L	Sil	1.68	1.68	1.50	1.50	.312	.312	.375	.375
28	........Cruiser Six-HCS	M	6-3 1/2x4 1/2	....	90-3000	260.0	6.25	....	N	Se	L	Sil	1.68	1.68	1.50	1.50	.337	.337	.375	.375
29	........Sea Lion Six-LHS	M	6-3 1/2x4 1/2	....	110-3400	260.0	6.25	....	N	Se	L	Sil	1.68	1.68	1.50	1.50	.337	.337	.375	.375
30	........Cruiser Eight-GCE	M	8-3 1/2x4 1/2	....	125-3000	347.0	5.75	....	N	Se	L	Sil	1.68	1.68	1.50	1.50	.337	.337	.375	.375
31	........Sea Lion Eight-LCE	M	8-3 1/2x4 1/2	....	141-3400	347.0	5.75	....	N	Se	L	Sil	1.68	1.68	1.50	1.50	.337	.337	.375	.375
32	Vimalert........V-1700	M	12-5 1/2x6	....	1000-2600	1710.0	6.65	2020-2600 (EA)	W	Se	I	R48	2.00	1.75	1.56	1.37	.538	.533	.622	.622
33	Waukesha........(12) ICK	Ind	4-2 1/2x3 1/8	18-2800	14-2000	61.3	5.70	40-1700 (BE)	N	Se	L	Sil	1.12	.937	1.00	.812	.228	.250	.312	.312
34	........(12) FC	T,Tr,Ind	4-3 1/4x4	32-2800	24-1800	133.0	5.56	86-1200 (BE)	N	In	L	Sil	1.34	1.34	1.18	1.18	.281	.281	.312	.312
35	........(12) XAH	T,Ind	4-3 5/8x4 1/2	43-2200	36-1800	185.0	5.50	120-900 (BE)	N	In	L	Sil	1.56	1.56	1.37	1.37	.302	.275	.375	.375
36	........190GL	T,Tr,Ind	6-3 3/4x4	61-1800	61-1800	265.0	6.70	210-900 (BE)	W	In	I	Sil	1.40	1.28	1.21	1.12	.359	.375	.375	.375
37	........(11) 6BZ	T,B,Ind	6-4x4 1/4	106-3000	89-3000	320.0	5.75	235-1000 (BE)	N	In	L	Sil	1.68	1.43	1.50	1.25	.375	.375	.375	.375
38	........(11) 140-GK	T,B,Ind	6-4 1/2x5 1/2	142-2250	127-2250	525.0	6.00	425-1000 (BE)	W	In	L	Sil	2.12	1.56	1.87	1.37	.531	.434	.434	.434
39	........(11) 6SRKR	T,B,Ind	6-4 7/16x5 1/2	126-2250	109-2250	517.0	5.50	369 600 (BE)	N	Se	L	Sil	2.16	1.65	1.87	1.37	.386	.375	.375	.375
40	........(11) 145-GK	T,B,Ind	6-5 1/4x6	186-2000	172-2000	779.0	6.20	590-1200 (BE)	W	In	I	Sil	2.37	1.84	2.12	1.62	.594	.531	.500	.500
41	........(12) 6WAK	T,B,Ind	6-6 1/4x6 1/2	235-1800	193-1300	1197.0	5.20	865-900 (BE)	W	In	I	Sil	2.65	2.22	2.37	2.00	.656	.656	.500	.500
42	........(12) 6NK	Ind	6-7x8 1/2	221-1050	200-950	1962.0	5.50	1330-600 (BE)	W	In	I	Sil	2.84	2.53	2.50	2.25	.718	.718	.562	.562
43	........(12) 6LRO	Ind	6-8 1/2x8 1/2	430-1050	374-900	2894.0	6.60	2260-800 (BE)	W	Se	I	Sil	3.50	3.00	3.25	2.75	.750	.840	.562	.562
44	........(11) 145GZ	T,B,Tr,Ind	6-5 3/8x6	220-2000	206-2000	817.0	6.00	615-1200 (BE)	W	In	I	Sil	2.37	1.84	2.12	1.62	.594	.531	.497	.496
45	........6MZA	T,B,Ind	6-4 1/4x4 3/4	128-2800	113-2800	404.0	5.90	290-1000 (BE)	N	In	L	Sil	1.93	1.68	....	....	.375	.375	.375	.375
46	........**(11) 140GK	T,B,Tr,Ind	6-4 1/2x5 1/2	170-2800	159-2600	525.0	6.40	435-800 (BE)	W	In	I	Sil	2.12	1.56	1.87	1.37	.540	.540	.437	.437
47	........**(11) 140GZ	T,B,Tr,Ind	6-4 5/8x5 1/2	188-2800	171-2600	554.0	6.40	460-800 (BE)	W	In	I	Sil	2.12	1.56	1.87	1.37	.540	.540	.437	.437
48	........**(11) 145GK	T,B,Tr,Ind	6-5 1/4x6	225-2400	207-2400	779.0	6.20	585-1400 (BE)	W	In	I	Sil	2.56	2.03	2.31	1.81	.600	.600	.500	.500
49	........180GL	T,Tr,Ind	4-3 1/2x3 3/4	36-2000	31-2000	144.0	6.80	105- 800 (EA)	W	In	I	Sil	1.31	1.13	1.18	1.00	.312	.281	.372	.372
50	........**195GKA	T,Tr	6-4 1/8x4	122-3000	110-3000	320.0	6.20	230-1600 (EA)	N	In	I	Sil	1.84	1.59	1.69	1.44	.406	.411	.372	.372
51	........195GK	T,B,Tr,Ind	6-4 1/8x4	105-2400	96-2400	320.0	6.20	232-1500 (EA)	N	In	I	Sil	1.84	1.59	1.69	1.44	.406	.411	.372	.372
52	White........110A	T	6-3 9/16x4 1/2	100-3100	....	270.0	6.21	200-1200 (BE)	N	In	L	CNS°	1.65	1.63	1.43	1.40	.381	.381	.373	.373
53	........115A	T	6-3 3/4x4 1/2	110-3100	....	298.0	6.66	230-1200 (BE)	N	In	L	CNS°	1.97	1.63	1.75	1.40	.381	.381	.373	.373
54	........120A	T	6-3 7/8x4 1/2	114-3000	....	318.0	6.50	250-1200 (BE)	N	In	L	Sil°(x)	1.97	1.63	1.75	1.40	.381	.381	.373	.432
55	........130A	T	6-4x4 1/2	120-3000	....	340.0	6.60	270-1200 (BE)	N	In	L	Sil°(x)	1.97	1.63	1.75	1.40	.381	.381	.373	.432
56	........140A	T	6-3 7/8x5 1/8	125-3000	....	362.0	6.03	285-1400 (BE)	N	In	L	Sil°(x)	1.97	1.63	1.75	1.40	.381	.381	.373	.432
57	........150A	T	6-4x5 1/8	135-3000	....	386.0	6.45	315-1300 (BE)	....	In	L	Sil°(x)	1.97	1.63	1.75	1.40	.381	.381	.373	.432
58	........260A	T	6-4 3/8x5	170-2800	....	451.0	6.25	350-1200 (BE)	N	In	L	Sil°(x)	2.35	1.88	1.99	1.75	.423	.423	.434	.432
59	........280A	T	6-4 5/8x5	184-2800	....	504.0	6.50	405-1200 (BE)	N	In	L	Sil°(x)	2.35	1.88	1.99	1.75	.423	.434	.434	.432
60	........280TA	B	6-4 5/8x5	175-2700	....	504.0	6.00	400-1200 (BE)	N	In	L	Sil°(x)	2.35	1.88	1.99	1.75	.423	.423	.434	.432
61	........24AK	B	12-4 1/8x4 1/4	210-2700	....	681.0	6.00	500-1200 (BE)	D	In	L	Sil°(x)	1.85	1.76	1.62	1.62	.381	.381	.401	.432
62	Willys........4-63	C,T	4-3 1/8x4 3/8	63-4000	....	134.2	6.48	106-2000 (BE)	N	In	L	CHS	1.53	1.46	1.34	1.20	.360	.360	.373	.373
63	6-63	C	6-3x3 1/2	72-4000	....	148.4	6.42	117-4000 (BE)	N	In	L	(14)	1.37	1.28	1.12	1.12	.294	.300	.340	.340
64	Wisconsin........TE	Tr,Ind	2-3x3 1/4	11.2-2600	11.2-2600	45.9	4.60	27-1600 (EA)	N	Se	L	Aus	1.31	1.31	1.12	1.12	.275	.275	.309	.309
65	........TF	Tr,Ind	2-3 1/4x3 1/4	13.3-2600	13.3-2600	53.9	4.67	32.5-1600 (EA)	N	Se	L	Aus	1.31	1.31	1.12	1.12	.275	.275	.309	.309
66	........VE-4	Tr,Ind	4-3x3 1/4	22-2600	22-2600	91.9	4.60	50-1600 (EA)	N	Se	L	Aus	1.31	1.31	1.12	1.12	.275	.275	.309	.309
67	........VF-4	Tr,Ind	4-3 1/4x3 1/4	25-2400	25-2400	107.7	4.67	57-1600 (EA)	N	Se	L	Aus	1.31	1.31	1.12	1.12	.275	.275	.309	.309
68	........VP-4	Tr,Ind	4-3 1/2x4	31-2200	31-2200	154.0	4.60	86-1400 (EA)	N	Se	L	Aus	1.56	1.56	1.37	1.37	.275	.275	.309	.309

For other engines see **SMALL GASOLINE POWER UNITS** table

ABBREVIATIONS

^—Includes rod, cap, screws, wristpin, bushing, and bearing.
°—Stellite faced.
*—Weight complete with ignition and carburetor.
**—Pressure also to Camshaft thrust bearing.
‡—As mounted in chassis on tilt.
—Also available in reduction gear models.
*—Also available in R.H. rotation.
**—High output.
‡—Tocco hardened.
‡‡—Forked 23.7 oz.—Blade 22.4 oz.
—Weight per pair.
—4 Rings used on Trucks and 5 on Coaches.
—5.00 for gasoline—6.00 for natural gas or butane.

••—Two rods used; 1 clamped tight weighing 308 oz., and 1 loose outside of bearing weighing 240 oz.
#—Dual.
##—Cast Iron 315, Aluminum 250 lbs.
‡—Super-Charged engine.
°°—Weight of piston only.
^—For cars—intake and exhaust lift—.3275 in.
—Weight for cars—540 lbs.
•—For cars—39¼ in.
^^—Weight for cars—577, for ½ ton trucks—573 lbs.
(2)—Two used.
(4)—Four used.
(7)—Roller bearings.
(9)—Ball bearings.
(11)—Automotive power ratings.
(12)—Industrial power ratings.

(14)—Unilay Type 307 head, 3140 steel stem.
(a)—Main bearings.
(b)—Wristpins.
(c)—Connecting rods.
(d)—Camshaft.
(e)—Accessory drive.
(f)—Valve lifters or rocker arms and shafts.
(g)—Timing gears or chain.
(h)—Intake 30, Exhaust 45
(k)—Intake 30, Exhaust 44.
(n)—Intake 15, Exhaust 45.
(p)—Hydraulic valve lifters and cylinder walls.
(r)—Reverse gear.
(s)—Fan drive gear.
(t)—Tappets and valve mechanism.
(u)—Complete with SAE housing.

(x)—Sodium cooled.
(z)—Intake 30, Exhaust 29.
AC—Aluminum or cast iron.
ACI—Alloy cast iron.
AF—Aircooled fin.
Al—Aluminum alloy.
Ala—Aluminum alloy, anodized.
Al—Aluminum bronze.
Als—Aluminum alloy with steel strut.
Alst—Aluminum alloy with steel strut, tin plated.
Alt—Aluminum alloy (Tin coated).
AS—Alloy steel.
Aus—Austenitic steel.
B—Buses.
BE—Bare engine.
Bo—Used in both intake and exhaust seats.
C—Cars.

For Directory of the Manufacturers listed above, see page 63.

ENGINES—*Concluded*

Valves: Angle (Deg.)	Valves: Seats: Inserts Used?	Valves: Seats: Insert Material (S.A.E. No.)	Camshaft Drive—Type	Pistons: Material	Pistons: Weight with Pins, Rings, Bushings (Oz.)	Pistons: Piston Pin—Diameter and Length (In.)	Number of Rings per Piston	Connecting Rods: Material	Connecting Rods: Center to Center Length (In.)	Connecting Rods: Weight with Bushing and Cap (Oz.)	Crankshaft: Material	Crankshaft: Counter Balance Used	Crankshaft: Crank-Pin Diameter and Length (In.)	Crankshaft: Main Bearings: Number	Crankshaft: Main Bearings: Diameter and Length (In.): Front	Crankshaft: Main Bearings: Diameter and Length (In.): Rear	Oil Pressure to—	Carburetor: Make	Carburetor: Size	Engine Weight without Carburetor or Ignition (Lb.)	Overall Dimensions (In.): Width	Overall Dimensions (In.): Height	Overall Dimensions (In.): Length	Clutch Housing (S.A.E. Nos.)	Line Number
45	N	......	HG	CIA	64	1.10x3.25	3	1045	8½	43	1045	N	1.50x2.12	2	1.50x3.00	1.50x3.00	Splash	Str	1	415	19½	22 11/16	36¼	......	1
45	N	......	HG	Al	8	.625x2.12	3	1045	6	14	1045	N	1.56x1.25	2	ND3207	ND3207	adg	Str	⅝	240	18¼	19⅛	27 1/16	......	2
45	N	......	HG	CIA	19	.625x2.40	3	1045	8	27	1045	N	1.75x1.50	2	1.76x2.81	1.73x2.87	acg	Str	⅝	330	15⅞	21⅛	36¼	......	3
45	E	CA	HG	CI	30	.875x2.75	3	1045	7⅛	29	1045	N	1.75x1.25	3	2.12x1.43	2.12x1.18	abcdg	Str	1	490	21⅜	24 1/16	35	......	4
45	E	CA	HG	CI	45	1.10x3.06	4	1045	8¾	46	1045	N	2.00x1.50	3	2.00x2.50	2.00x1.87	abcdg	Str	1	610	19⅛	26¼	41	5	5
45	N	......	HG	CIA	64	1.10x3.25	3	1045	8½	43	1045	N	1.50x2.12	3	1.50x3.00	1.50x3.00	acg	Str	1	620	19½	22 11/16	46⅝	......	6
45	N	......	HG	CIA	69	1.10x3.56	4	1045	10⅛	66	1045	N	2.00x2.25	3	2.00x4.18	2.00x3.50	acg	Str	1¼	830	20¼	26 11/16	54⅝	......	7
45	N	......	HG	CIA	89	1.10x3.93	4	1045	10⅛	66	1046	N	2.00x2.25	3	2.00x4.18	2.00x3.50	acg	Str	1½	830	20¼	26 11/16	54⅝	......	8
45	N	......	HG	CIA	82	1.25x3.87	4	1045	11⅝	87	1045	N	2.56x2.25	5	2.56x4.25	2.56x4.25	acdg	Str	1½	1175	22¾	27 1/16	59 1/16	......	9
45	N	......	HG	CIA	126	1.43x4.68	4	1045	13¼	168	1045	N	2.56x3.00	5	2.62x4.50	2.62x4.50	abcdg	Str	2	1720	25⅞	37⅝	74 1/16	......	10
45	N	......	HG	CIA	150	1.43x5.25	4	1045	13¼	168	1045	N	2.56x3.00	5	2.62x4.50	2.62x4.50	abcdg	Str	2	1730	25⅞	37⅝	74 1/16	......	11
45	N	......	HG	CIA	190	1.43x5.50	4	1045	13¼	168	1045	N	2.56x3.00	5	2.62x4.50	2.62x4.50	abcdg	Str	2	1740	25⅞	37⅝	74 1/16	......	12
45	E	CA	HG	Al	48	1.00x3.85	4	1045	8	40	1045	N	2.00x1.50	7	2.62x2.00	2.62x1.25	abcdg	Str	1¼	1016	22½	26⅛	63 11/16	......	13
45	E	CA	HG	Al	48	1.00x4.00	4	1045	8¾	46	1045	N	2.25x1.50	7	2.62x2.75	2.62x1.62	abcdg	Str	1¼	1185	20¼	27⅞	67 11/16	......	14
45	N	......	HG	CIA	82	1.25x3.87	4	1045	11⅝	87	1045	N	2.56x2.25	7	2.56x4.25	2.56x4.25	acdg	Str	1½	1475	23⅝	33⅛	72 1/16	......	15
45	N	......	HG	CIA	106	1.25x4.31	4	1045	11⅝	87	1045	N	2.56x2.25	7	2.56x4.25	2.56x4.25	acdg	Str	2	1565	24⅛	33⅛	72⅝	......	16
45	N	......	HG	CIA	126	1.43x4.68	4	1045	13¼	168	1045	N	2.56x3.00	7	2.62x4.50	2.62x4.50	abcdg	Str	2	2330	27⅛	37⅝	91⅝	......	17
45	N	......	HG	CIA	150	1.43x5.25	4	1045	13¼	168	1045	N	2.56x3.00	7	2.62x4.50	2.62x4.50	abcdg	Str	2	2360	27⅛	37⅝	91⅝	......	18
45	N	......	HG	CIA	190	1.43x5.50	4	1045	13¼	168	1045	N	2.56x3.00	7	2.62x4.50	2.62x4.50	abcdg	Str	2	2390	27⅛	37⅝	91⅝	......	19
45	N	......	Ch	Al	54⅛	1.28x3.62	4	4340	8⅝	68	Spec‡	Y	2.49x1.88	7	2.62x1.81	2.62x1.81	ac	Hol	1	990	42⅛	26 11/16	47⅝	3	20
45	N	......	HG	CI	......	1.00x3.75	3	Al	8½	......	CS	Y	2.00x2.00	2	2.00x2.00	2.00x2.00	Splash	Zen	⅞	200	15 5/16	24⅝	17 5/16	......	21
45	N	......	HG	Al	15	.750x2.56	4	CS	7⅛	26	CS	Y	1.75x1.37	2	1.75x1.87	1.75x2.00	acdg	Zen	⅞	300	20 1/16	22⅝	28⅛	......	22
45	N	......	HG	Al	......	.688x2.16	3	CS	6	......	CS	Y	1.56x1.23	2	1.99x1.62	1.99x1.25	acdgr	Zen	⅞	290	17⅛	19	26⅜	......	23
45	N	......	HG	CI	19	.625x2.44	3	CS	7½	22	CS	N	1.50x1.75	2	1.50x2.75	1.50x2.75	acdg	Zen	1	347	17 5/16	21 1/16	34 11/16	......	24
45	N	......	HG	Al	15	.750x2.56	4	Al	7¼	18	CS	Y	1.75x1.37	3	1.75x2.37	1.75x2.37	acdgr	Zen	1¼	430	20 11/16	22⅝	34 11/16	......	25
45	N	......	HG	Al	20	.875x2.75	4	Al	8½	30	CS	N	2.00x1.75	3	2.00x2.50	2.00x2.50	acd	Zen	1¼	524	18½	25¼	39⅝	......	26
45	N	......	HG	Al	15	.750x2.56	4	Al	7¼	18	CS	Y	1.75x1.37	4	1.75x2.50	1.75x2.00	acdg	Zen	1¼	629	24	20⅝	43⅞	......	27
45	N	......	HG	Al	28	.875x3.00	4	Al	8½	28	CS	N	2.00x1.75	7	2.00x3.00	2.00x1.75	acdg	Str	1½	765	20 5/16	26⅜	49 11/16	......	28
45	N	......	HG	Al	28	.875x3.00	4	Al	8½	28	CS	N	2.00x1.75	7	2.00x3.00	2.00x1.75	acdg	Str	1¾	810	22 5/16	26⅝	49 11/16	......	29
45	N	......	HG	Al	28	.875x3.00	4	Al	8½	28	CS	N	2.00x1.75	9	2.00x3.00	2.00x1.75	acdg	Str	1¾	1067	21 5/16	26 5/16	62⅝	......	30
45	N	......	HG	Al	28	.875x3.00	4	Al	8½	28	CS	N	2.00x1.75	9	2.00x3.00	2.00x1.75	acdg	Str(2)	1½	1140	22⅝	26 5/16	62⅝	......	31
(h)	Y	Spec	.....	4145	67	1.44x2.21	5	6415	10	‡‡	6415	Y	3.00x2.37	7	3.75x1.31	3.75x1.31	acd	Str	.....	2475	45⅝	56⅞	96	......	32
45	N	......	HG	Al	8	.625x2.12	4	1045	6	14	1045	N	1.56x1.25	2(9)	ND1207	ND1207	ad	Op	⅝	143	14 11/16	20½	21 11/16	6	33
45	E	CA	HG	CI	30	.875x2.75	4	1045	7¼	29	1045	N	1.75x1.06	3	2.12x1.18	2.12x1.43	abcdg	Op	1	290	19	26¾	27¾	4(T)	34
45	E	CA	HG	CI	45	1.12x3.03	4	1045	8¾	46	1045	N	2.00x1.50	3	2.00x1.87	2.00x2.50	abcdg	Op	1	385	17⅞	27	32⅞	5	35
44½	N	......	HG	CI	......	1.25x3.00	4	1045	6¾	......	1045	N	2.25x1.37	4	2.62x1.75	2.62x1.75	abcdfg	Op	1½	......	22	29 1/16	42⅝	3	36
45	E	CA	HG	Al	46	1.00x3.85	4	1045	8	40	1045	N	2.00x1.50	7	2.62x1.25	2.62x2.00	abcdg	Op	1½	709	19⅛	31	39⅛	3	37
(h)	E	CA	HG	Al	64	1.37x3.87	4	1045	10¼	65	1045	N	2.62x2.00	7	3.25x1.75	3.25x3.00	abcdfg	Op	1¾	1390	23⅝	41 11/16	50⅝	3	38
30	E	CA	HG	Al	70	1.37x4.25	4	1045	10¼	63	1045	N	2.75x1.75	7	3.00x1.87	3.00x3.00	abcdg	Op	1¾	1225	24⅛	39⅝	46 5/16	3	39
(h)	E	CA	HG	Al	103	1.62x4.87	4	1045	11¾	133	1045	N	3.00x2.25	7	3.50x2.00	3.50x3.50	abcdfg	Op	2	1810	25¾	46⅝	55 11/16	2	40
(h)	E	CA	HG	CI	292	1.87x5.50	4	1045	13¼	195	1045	N	3.37x2.37	7	4.00x2.56	4.00x3.56	abcdfg	Op	2½	3050	30⅝	50⅞	65⅝	0	41
(h)	E	CA	HG	CI	304	2.00x6.00	4	1045	15⅜	314	1045	N	3.25x2.75	7	3.75x3.75	3.75x5.50	abcdfg	Op	2½	5900	31 11/16	61 11/16	76⅝	00	42
30	E	CA	HG	CI	776	2.25x7.75	5	1045	18⅝	474	1045	N	4.00x3.75	7	4.25x4.81	4.25x5.50	abcdfg	Op(2)	2½	9200	48½	65	95½	00	43
(h)	E	TS	HG	Al	110	1.62x4.50	4	1045	11¾	133	1045	N	3.00x2.25	7	3.50x2.00	3.50x5.50	abcdfg	Op	1¾	1810	25¾	46⅝	55 11/16	2	44
45	E	CA	HG	Al	45	1.00x4.00	4	1045	8¾	48	1045	N	2.25x1.50	7	2.62x1.62	2.62x2.75	abcdg	Op	1¾	920	20⅞	34¾	43 11/16	3	45
(h)	E	TS	HG	Al	64	1.37x3.87	4	1045	10¼	85	C1046	Y	2.62x2.00	7	3.25x1.59	3.25x3.00	abcdfg	Op	1¾	1390	23⅝	41 11/16	50⅝	3	46
(h)	E	TS	HG	Al	67	1.37x3.87	4	1045	10¼	85	C1046	Y	2.62x2.00	7	3.25x1.59	3.25x3.00	abcdfg	Op	1¾	1390	23⅝	41 11/16	50⅝	3	47
(h)	E	TS	.....	Al	103	1.62x4.50	4	1045	11¾	.....	C1046	Y	3.00x2.25	7	3.50x2.00	3.50x3.50	abcdfg	Op	2	1810	25¾	46⅝	57⅛	2	48
44½	N	......	HG	CI	**55	1.25x2.75	4	1045	6¾	31½	1045	.....	2.00x1.38	3	2.25x1.75	2.25x1.62	acdg	Op	1	450	19	27 11/16	30½	4	49
44½	E	St	HG	Al	**42½	1.25x3.44	4	1045	6¾	47¼	1045	Y	2.62x1.38	4	2.62x1.88	2.62x1.75	abcd	Op	1¾	775	20	29	44⅞	3	50
44½	E	St	HG	Al	**42½	1.25x3.44	4	1045	6¾	47¼	1045	Y	2.62x1.38	4	2.62x1.88	2.62x1.75	abc	Op	1¾	775	20	29	44⅞	3	51
45	E	St	HG	Al	39	1.00x3.03	4	1040	9 11/16	52	1050‡	Y	2.18x1.34	7	3.00x1.84	3.00x1.93	abcdg	Str	1¼	1075	29⅝	40⅝	44¼	3	52
45	E	St	HG	Al	39	1.18x3.31	4	1040	9 11/16	56	1050‡	Y	2.18x1.34	7	3.00x1.84	3.00x1.93	abcdg	Str	1¼	1075	29⅝	40⅝	44¼	3	53
45	E	St	HG	Al	41	1.00x3.46	4	1040	9 11/16	52	1050‡	Y	2.18x1.34	7	3.00x1.84	3.00x1.93	abcdfg	Str	1¼	1070	29⅝	40⅝	44¼	3	54
45	E	St	HG	Al	44	1.18x3.62	4	1040	9 11/16	56	1050‡	Y	2.18x1.34	7	3.00x1.84	3.00x1.93	abcdfg	Str	1¼	1075	29⅝	40⅝	44¼	3	55
45	E	St	HG	Al	41	1.00x3.46	4	1040	9 11/16	52	1050‡	Y	2.18x1.34	7	3.00x1.84	3.00x1.93	abcdfg	Str	1¼	1070	29⅝	40⅝	44¼	3	56
45	E	St	HG	Al	44	1.18x3.62	4	1040	9 11/16	52	1050‡	Y	2.18x1.34	7	3.00x1.84	3.00x1.93	abcdfg	Hol	1¼	1070	29⅝	40⅝	44¼	3	57
45	E	Spec*	HG	Al	54	1.24x3.93	4	3130	9¼	75	1050	Y	2.50x2.06	7	3.25x1.69	3.25x2.00	abcdgpe	Hol	1⅝	1409*	34	37	51	2	58
45	E	Spec*	HG	Al	62	1.24x3.93	4	3130	9¼	75	1050	Y	2.50x2.06	7	3.25x1.66	3.26x2.00	abcdgpe	Hol	1⅝	1442*	34	37	51	2	59
45	E	St	HG	Al	62	1.24x3.75	5	3130	9¼	79	1050‡	Y	2.80x1.81	7	3.25x1.68	3.25x2.00	abcdfg	Zenƒ	1½	1721	55	20	64	1	60
(h)	E	St	HG	Al	44	1.18x3.62	5	1040	8⅜	53	1050‡	Y	2.43x2.31	7	2.87x2.09	2.87x2.40	abcdfg	Zenƒ	1⅝	2090	56	21	70	1	61
45	N	N	HG	Al	18.5	.812x2.78	3	1035	9 5/16	34	1040	Y	1.83x1.30	3	2.33x1.92	2.33x1.75	acdg	ZC	1¼	344	19	28⅝	28¼	......	62
45	N	......	HG	Al	15.4	.749x2.53	3	C1141	6 11/16	22	C1040	.....	......	4	2.25x1.30	2.25x1.60	acdg	ZC	1 1/16	354	21	26 5/16	31	......	63
45	Y	MI	HG	Al	16	.750x2.56	4	1035	8⅝	22	1045	Y	1.75x1.12	2	Timken	Timken	PJ	Zen	¾	220*	16⅞	22 5/16	22 5/16	......	64
45	Y	MI	HG	Al	18⅛	.750x2.56	4	1035	8⅝	22	1045	Y	1.75x1.12	2	Timken	Timken	PJ	Zen	¾	220*	16⅞	22 5/16	22 5/16	......	65
45	Bo	MI	HG	Al	16	.750x2.56	4	1035	8⅝	22	1045	N	1.75x1.12	2	Timken	Timken	PJ	Zen	⅝	295*	21½	25½	25⅝	......	66
45	Bo	MI	HG	Al	18.2	.750x2.56	4	1035	8⅝	22	1045	N	1.75x1.12	2	Timken	Timken	PJ	Zen	⅞	295*	21½	25½	25⅝	......	67
45	Bo	MI	HG	Al	28	.837x2.75	4	1035	8⅝	29	1045	N	1.88x1.25	2	Timken	Timken	PJ	MaS	1	418*	24	28¾	28½	......	68

For other engines see SMALL GASOLINE POWER UNITS table

ABBREVIATIONS—Continued.

CA—Cast alloy.
Car—Carter Carburetor Corp.
CAS—Cast alloy steel.
Ch—Chain.
CHS—Chrome nickel silicon steel.
CI—Cast iron.
CIA—Cast iron, anodized.
CMS—Carbon manganese steel.
CMT—Chromium tungsten steel.
CNS—Chrome nickel steel.
COE—Cab over engine.
CS—Carbon steel.
D—Dry liners.
DC—Durachrome castings.
DFS—Drop forged steel.
Dia—Diachrome.
Dm—Durachrome
Dur—Duralumin.
E—Used on exhaust valve seats.
EA—Engine with standard accessories.
Eat—Eatonite.
Ens—Ensign.
FA—Fire apparatus.
FC—Forward control chassis.
H—Horizontal motor.
HC—Helical gear and chain.
HFA—Hard facing alloy.
HG—Helical gear.
Hh—Horizontal in head (Valve).
Hol—Holley Carburetor Co.
I—In head (Valves).
In—Integral.
Ind—Industrial.
Jad—Jadson.
L—Valves at side (L-Head).
M—Marine.
MA—Molybdenum alloy.
MaS—Marvel-Schebler Carburetor Div.
MCS—Molybdenum chrome steel.
MI—Moly Iron.
MS—Manganese steel.
N—No or none.
NCI—Nickel cast iron.
Nic—Nickel chrome.
Nif—Nifferrite.
Nir—Ni-Resist.
NS—Nickel steel.
Op—Optional.
PJ—Pump jet.
PS—Pump splash system.
R-P—Rochester Products.
SA—Special alloy.
SB—Spiral bevel gear.
Se—Separate.
SG—Spur gear.
SF—Steel forging.
Sil—Silichrome steel.
Spec—Special.
SS—Semi-steel.
St—Stellite steel.
Ste—Steel.
Str—Stromberg-Elmira Div.
T-12—Thompson Products No. 12.
Th—Valves opposite (T-Head).
T—Trucks.
TA—Tungsten alloy.
Tr—Tractors.
TS—Tool steel.
Tun—Tungsten steel.
W—Wet Liners.
WM—Wausau Cast Moly No. 1.
Y—Yes.
Zen—Zenith Carburetor Div.
ZC—Zenith or Carter.

For Directory of the Manufacturers listed above, see page 63.

AUTOMOTIVE DIESEL AND

Line Number	Engine Make and Model	Built Under License from	Designed for	Type	Number of Cylinders Bore and Stroke (In.)	Cylinder Liners—Type	Cycle	Piston Displacement (Cu. In.)	With Bare Engine: Maximum Brake Hp. at Specified R.P.M.	With Standard Accessories: Max. Intermittent Hp. at Specified R.P.M.	With Standard Accessories: Continuous Sustained Hp. at Specified R.P.M.	Compression Ratio—to 1	Max. Combustion Pressure (Lb. per Sq. In.)	B.M.E.P. at Continuous Hp. (Lb. per Sq. In.)	Weight per Continuous Hp. (Lb.) ♦	Max. Torque in Lb. Ft. at Specified R.P.M.	Shipping Weight (Lb.): Automotive or Industrial	Shipping Weight (Lb.): Marine	Valves: Arrangement	Valves: Intake Port Diameter and Lift (In.)
			GENERAL																VALVES	
1	Atlas Imperial 4KS668		I,M	DI	4-9x10½	W	4	2672			192-750	14.00	850	78	68.0		13000	15100	HI	3.25-.875
2	5KS668		I,M	DI	5-9x10½	W	4	3340			242-750	14.00	850	78	58.0		14000	16100	HI	3.25-.875
3	6KS668		I,M	DI	6-9x10½	W	4	4008			290-750	14.00	850	78	59.0		17100	20000	HI	3.25-.875
4	*6KST668		I,M	DI	6-9x10½	W	4	4008			435-750	13.00	900	115	42.5		18500	20800	HI	3.25-.875
5	8KS668		I,M	DI	8-9x10½	W	4	5344			385-750	14.00	850	78	56.1		21600	24500	HI	3.25-.875
6	*8KST668		I,M	DI	8-9x10½	W	4	5344			580-750	13.00	900	115	39.3		22800	25600	HI	3.25-.875
7	Buda 1BD-38	Lanova	I	Ach	1-3 7/16x4⅛	W	4	38	8.5-2000	7-2000	6.5-1800	15.30	725	75		24.5-1400			VI	1⅜-.490
8	2BD-77	Lanova	M,I	Ach	2-3 7/16x4⅛	W	4	77	17-2000	15.8-2000	13-1800	15.30	725	74	46.1	49-1400	600	820	VI	1⅜-.429
9	4BD-153	Lanova	Tr,M,I	Ach	4-3 7/16x4⅛	W	4	153	40-2400	35-2400	27-2000	15.30	725	70	28.2	104-1400	700	1000	VI	1⅜-.429
10	4BD-182	Lanova	Tr,M,I	Ach	4-3¾x4⅛	N	4	182	46.5-2400	40-2400	31-1800	15.00	725	75		122-1400			VI	1⅜-.429
11	6BD-230	Lanova	T,Tr,M,I	Ach	6-3 7/16x4⅛	W	4	230	60-2400	52-2400	40-1800	15.30	725	76	21.5	156-1400	860	1200	VI	1⅜-.429
12	6BD-273	Lanova	M,T,I	Ach	6-3¾x4⅛	N	4	273	75-2400	65-2400	50-1800	15.00	725	80		197-1300			VI	1⅜-.429
13	6-DT-317	Lanova	T,Tr,B,I	Ach	6-3⅝x5⅛	D	4	317	90-2300	75-2300	58-1800	14.50	725	78	20.3	224-1500	1133		VI	1⅜-.426
14	6-DTM-317	Lanova	M	Ach	6-3⅝x5⅛	D	4	317	90-2300	75-2100	56-1800	14.50	725	78	22.3	224-1500		1250	VI	1⅜-.486
15	6-DT-468	Lanova	T,Tr,B,I	Ach	6-4¼x5½	D	4	468	113-2000	97-2000	75-1600	14.20	725	79	19.1	268.5-1100	1435		VI	1.59-.486
16	6-DTM-468	Lanova	M	Ach	6-4¼x5½	D	4	468	113-2000	97-1800	75-1600	14.20	725	79	23.7	308-1100		1775	VI	1.59-.476
17	6DC-1879	Lanova	R,I	Ach	6-6¾x8¾	W	4	1879	248-1100	222-1100	171-900	13.00	725	80	40.6	1330-650	6960		VI	2.50-.687
18	6DCM-1879	Lanova	M	Ach	6-6¾x8¾	W	4	1879	248-1100	222-1100	186-1000	13.00	725	78	34.9	1330-650		6500	VI	2.50-.687
19	6-PH-D1879	Lanova	I	Ach	6-6¾x8¾	W	4	1879	248-1100	222-1100	171-900	13.00	725	80	52.6	1330-650	9000		VI	2.50-.687
20	6-DC-844	Lanova	T,Tr,B,I	Ach	6-5¼x6½	W	4	844	200-2000	176-2000	140-1600	13.00	725	82	20.4	620-1200	2850		VI	2.00-.580
21	6-DCM-844	Lanova	M	Ach	6-5¼x6½	W	4	844	200-2000	176-2000	140-1600	13.00	725	82	27.9	620-1200		3900	VI	2.00-.540
22	*6-DCS-844	Lanova	T,B,Tr,I	Ach	6-5¼x6½	W	4	814	245-2200	211-2000	172-1600		725	101		690-1400			VI	2.00-.540
23	6-DCSM-844	Lanova	M	Ach	6-5¼x6½	W	4	844	245-2200	211-2000	172-1600		725	101		690-1400			VI	2.00-.540
24	8-DC-1125	Lanova	T,R,I	Ach	8-5¼x6½	W	4	1125	240-1800	212-1800	160-1600	13.00	725	71		800-1100			VI	2.00-.540
25	8DCM-1125	Lanova	M	Ach	8-5¼x6½	W	4	1125	240-1800	212-1800	160-1600	13.00	725	71		800-1100			VI	2.00-.540
26	*8DCS-1125	Lanova	T,Tr,I	Ach	8-5¼x6½	W	4	1125	300-2000	300-2000	264-2000		725	88		970-1250			VI	2.00-.540
27	*8DCSM-1125	Lanova	M	Ach	8-5¼x6½	W	4	1125	300-2000	300-2000	264-2000		725	88		970-1250			VI	2.00-.540
28	4DC-645	Lanova	I	Ach	4-5⅝x6½	W	4	645	145-1800	127-1800	97-1400		725	85		484-1100			VI	2.00-.540
29	*6DCS-1879	Lanova	I	Ach	6-6¾x8¾	W	4	1879	330-1200	292-1200	212-900		725	99		1580-700			VI	2.50-.687
30	*6DCSMR-1879	Lanova	M	Ach	6-6¾x8¾	W	4	1879	330-1200	292-1200	212-900		725	99		1580-700			VI	2.50-.687
31	8DC-2505	Lanova	M,I	PC	8-6¾x8¾	W	4	2505	388-1300	347-1300	264-1000	13.00	825	83.5	37.1	1810-700	9600	12350	VI	2.50-.687
32	*8DCS-2505	Lanova	M,I	PC	8-6¾x8¾	W	4	2505	516-1300	456-1300	348-1000	13.00	875	110	31.0	2390-800	10500	13000	VI	2.50-.687
33	Caterpillar D-311	Own	Tr,M,I	PC	4-4x5	W	4	252	‡52-1650	47-1650	42-1650	19.4		78	48.0	161-1290	1915	2500†	VI	1 11/16-.424
34	D-315	Own	Tr,M,I	PC	4-4½x5½	W	4	350	‡70-1600	63-1600	57-1600	18.0		81	42.1	234-1350	2400	2930†	VI	1 11/16-.434
35	D-318	Own	Tr,M,I	PC	6-4½x5½	W	4	525	‡103-1600	94-1600	84-1600	18.0		87	36.9	335-1240	3100	3620†	VI	1 11/16-.434
36	D-8800	Own	Tr,M,I	PC	4-5¾x8	W	4	831	‡102-1000	92-1000	83-1000	15.7		79	53.0	561-800	4400	5530†	VI	2⅛-.468
37	D-13000	Own	Tr,M,R,I	PC	6-5¾x8	W	4	1246	‡150-1000	133-1000	120-1000	15.7		77	46.8	842-800	5610	7450†	VI	2⅛-.468
38	D-17000	Own	M,I,R	PC	8-5¾x8	W	4	1662	‡200-1000	181-1000	162-1000	15.7		77	49.4	1050-950	8000	9533†	VI	2⅛-.468
39	D-397	Own	M,I,R	PC	12-5¾x8	W	4	2493	‡500-1200	450-1200	400-1200	16.00		106	27.5	2327-900	11000	13750	VI	2⅛-.5925
40	D-386	Own	M,I,R	PC	12-5¾x8	W	4	2493	‡400-1200	380-1200	320-1200	16.00		85	33.6	1850-900	10770	13550	VI	2⅛-.5925
41	D-375	Own	M,I,R	PC	8-5¾x8	W	4	1662	‡335-1200	300-1200	268-1200	16.00		106	31.9	1550-900	8550	10250	VI	2⅛-.5925
42	D-364	Own	M,I,R	PC	8-5¾x8	W	4	1662	‡265-1200	240-1200	212-1200	16.00		85	39.5	1232-900	8370	10050	VI	2⅛-.5925
43	Climax D-149	Own	I,M	PC	2-4¼x5¼	W	4	149	22-1200	18-1200	18-1200	16.00	450	80	111.0	97-600	2000	2500	VI	1.75-.422
44	D-297	Own	I,M	PC	4-4¼x5¼	W	4	298	44-1200	36-1200	36-1200	16.00	450	80	83.3	192-600	3000	3500	VI	1.75-.422
45	Continental GD-157	Own	I,M	TC	4-3⅜x4⅜	W	4	157	37.6-2000	32-2000	25-1800	15.7		79	24.2	109-1250	605		VI	1.18-.375
46	HD-243	Own	I	TC	4-3¾x5½	W		243	53.1-2000	45-2000	39.8-1800	15		79	21.1	169.5-1200	840		VI	1.37-.328
47	HD-260	Own	I,M	TC	4-3⅞x5½	W		260	57.0-2000	48.5-2000	41.6-1800	15		79	20.2	181-1200	840		VI	1.37-.328
48	TD-427	Own		TC	6-4 7/16x4⅝	N		427	103-2000	87.2-2000	74.9-1800	14.5		79	17.4	298-1200	1300		VI	1.71-.437
49	RD-572	Own	I,M	TC	6-4¾x5⅜	D		572	137-2000	116-2000	96.5-1800	14.5		79	19.1	400-1200	1845		VI	1.87-.548
50	TD-6427	Own	T,B,Tr	TC	6-4 7/16x4⅝	N		427	112-2400		95-2400	14.5		108	13.4	300-1200	1270		VI	1.71-.437
51	RD-6572	Own	T,B,Tr	TC	6-4¾x5⅜	D		572	150-2200		127-2200	14.5		105	14.1	400-1200	1795		VI	1.87-.548
52	Cummins A-600	Own	T,B,Tr,M,R,I	DI	6-4x5	W	4	377	100-2200■	88-2200■	57-1600■	18.00	750	75	25.2	275-1200	1640	1719	VI	1.37-.406
53	H-400	Own	T,B,Tr,M,R,I	DI	4-4⅞x6	W	4	448	100-1800■	83-1800■	50-1200■	17.00	750	74	32.8	340-800	1840	1920	VI	1.75-.500
54	H-600	Own	T,B,Tr,M,R,I	DI	6-4⅞x6	W	4	672	150-1800■	125-1800■	93-1600■	17.00	750	72	25.5	500-800	2595	2690	VI	1.75-.500
55	*HS-600	Own	T,B,Tr,M,R,I	DI	6-4⅞x6	W	4	672	200-1800■	175-1800■	130-1600■	14.00	825	101	19.8	625-1400	2780	2900	VI	1.75-.500
56	NH-600	Own	T,B,Tr,M,R,I	DI	6-5⅛x6	W	4	743	200-2100■	174-2100■	130-1800■	15.50		78	19.2	535-1400	2680	2825	VI	1.56-.420
57	*NHS-600	Own	T,B,Tr,M,R,I	DI	6-5⅛x6	W	4	743	275-2100■	240-2100■	175-1800■	13.50		101	15.8	710-1600	2975	3155	VI	1.56-.420
58	HR-600	Own	T,B,Tr,M,R,I	DI	6-5⅛x6	W	4	743	165-1800■	141-1800■	108-1600■	15.50		71	26.2	540-1000	2600	2695	VI	1.75-.500
59	L-600	Own	M,R,I	DI	6-7x10	W	4	2300		250-1000■	190-9000■	14.00		72	39.8	1560-600	7790	9600	VI	2.75-.718
60	HR-400	Own	T,B,Tr,M,R,I	DI	4-5⅛x6	W	4	495	110-1800	94-1800	71-1600	15.50		71	25.9	360-1050	1840	1915	VI	1.75-.500
61	*HRS-600	Own	T,B,Tr,M,R,I	DI	6-5⅛x6	W	4	743	225-1800	191-1800	142-1600	13.50		95	19.6	695-1000	2780	2900	VI	1.75-.500
62	*NHRS-600	Own	T,B,Tr,M,R,I	DI	6-5⅛x6	W	4	743	300-2100	255-2100	188-1800	12.00		111	15.6	800-1400	2925	3155	VI	1.56-.420
63	NVH-1200	Own	T,Tr,M,R,I	DI	12-5⅛x6	W	4	1486	400-2100	350-2100	262-1800	15.50		78	21.0	1075-1200	5500		VI	1.56-.420
64	*NVHS-1200	Own	T,Tr,M,R,I	DI	12-5⅛x6	W	4	1486	560-2100	480-2100	350-1800	13.50		103	14.3	1420-1600	5000		VI	1.56-.420
65	Fairbanks-Morse 48A3	Own	M,R,I	PC	1-3x4	W	4	28		4.6-1800	3.5-1800	18.00		55	94.3	16	330	390		
66	48A4	Own	R,I	PC	1-4x5	W	4	63		11-1800	8-1200	18.00		84	137.5	45	1100			
67	48A4¼	Own	M,R,I	PC	1-4¼x5	W	4	71		12-1800	9-1200	18.00		84	122.2	53	1100			
68	48A4	Own	M,R,I	PC	2-4x5	W	4	126		23-1800	16-1200	18.00		84	84.7	96	1355	1620		
69	48A4¼	Own	M,R,I	PC	2-4¼x5	W	4	142		25-1800	18-1200	18.00		84	75.3	106	1355	1620		
70	48A4	Own	M,R,I	PC	3-4x5	W	4	188		34-1800	25-1200	18.00		87	68.4	140	1660	1865		
71	48A4¼	Own	M,R,I	PC	3-4¼x5	W	4	213		38-1800	28-1200	18.00		87	59.3	162	1660	1865		
72	48A4	Own	M,R,I	PC	6-4x5	W	4	377		68-1800	56-1200	18.00		87	37.5	280	2100	2385		
73	48A4¼	Own	M,R,I	PC	6-4¼x5	W	4	426		75-1800	56-1200	18.00		87	58.0	325	2100	2385		
74	45B3⅛	Own	I		1-3⅛x4	W	4	31		6.5-1800	5.25-1800	16.90		80	81.9	19	430			1.25
75	45B4⅛	Own	M,R,I		1-4⅛x4½	W	4	60		13.25-1800	10.5-1800	16.90		80	60.0	30	600	650		
76	(4) 31A6¼	Own	M,R,I		6-6¼x9	D	2				210-720	16.90	1150	70	65.3		13710	16720		
77	General Motors 2-71	Own	T,B,Tr,I,M	DI	2-4¼x5	D	2	142		65-2000●	48-1800●	17.00	1000	74	16.0	200-1200	770	Vwg	VI	No Valves
78	3-71	Own	T,B,Tr,I,M	DI	3-4¼x5	D	2	213		100-2000●	72-1800●	17.00	1000	74	17.0	300-1200	1245	Vwg	VI	No Valves
79	4-71	Own	T,B,Tr,I,M	DI	4-4¼x5	D	2	284		133-2000●	96-1800●	17.00	1000	74	14.0	400-1200	1380	Vwg	VI	No Valves

For abbreviations, see pages 156 and 157

For Directory of the Manufacturers listed above, see page 63.

OTHER HEAVY OIL ENGINES

VALVES	PISTONS					PISTON PIN		CONNECTING RODS			MAIN BEARINGS		INJECTION SYSTEM									STARTING METHOD		OVERALL DIMENSIONS			
Exhaust Port Diameter and Lift (In.)	Material	Length (In.)	Weight with Rings and Pin (Lb.)	No. of Compression Rings	No. of Oil Rings	Diameter and Length (In.)	Locked in—	Material (S. A. E. No.)	Center to Center Length (In.)	Weight with Cap and Bushing (Lb.)	Number	Diameter (In.)	Make of Pump	Make of Valve	Valve Type—Open or Closed	Orifices	Pressure—Nozzle Opening (Lb. per Sq. In.)	Air Cleaner—Make	Fuel Filter—Make	Lubricant Filter—Make	Minimum Recommended Cetane Number of Fuel	Make	Type	Length—Fan to Flywheel (In.)	Width (In.)	Height—To Top of Air Cleaner (In.)	Line Number
3.25- .875	CI	13.00	93.0	4	2	3.25-7.62	F	4140	22.25	85.0	5	6.25	Sc	Sc	C	Mu	3500	Opt	WP	Win	42	Own	A	96	56¾	79¾	1
3.25- .875	CI	13.00	93.0	4	2	3.25-7.62	F	4140	22.25	85.0	6	6.25	Sc	Sc	C	Mu	3500	Opt	WP	Win	42	Own	A	112	56¾	79¾	2
3.25- .875	CI	13.00	93.0	4	2	3.25-7.62	F	4140	22.25	85.0	7	6.25	Sc	Sc	C	Mu	3500	Opt	WP	Win	42	Own	A	125	56¾	79¾	3
3.25- .875	CI	13.25	95.0	4	2	3.25-7.62	F	4140	22.25	85.0	7	6.25	Sc	Sc	C	Mu	3500	Opt	WP	Win	42	Own	A	140	56¾	90	4
3.25- .875	CI	13.00	93.0	4	2	3.25-7.62	F	4140	22.25	85.0	9	6.25	Sc	Sc	C	Mu	3500	Opt	WP	Win	42	Own	A	155	56¾	79¾	5
3.25- .875	CI	13.25	95.0	4	2	3.25-7.62	F	4140	22.25	85.0	9	6.25	Sc	Sc	C	Mu	3500	Opt	WP	Win	42	Own	A	166	56¾	90	6
1.12- .429	AA	4.12	2.36	3	2	1.00-2.75	F	1035	7⅞	2.62	2	2.50	AB	AB	C	Pi	2000	Uni	Com	Fra	45	AL	E-H	18½	19¾	29⅛ (11)	7
1.12- .429	AA	4.12	2.36	3	2	1.00-2.75	F	1035	7⅞	2.62	3	2.50	AB	AB	C	Pi	2000	Uni	Com	Fra	45	AL	E-H	22 3/16	19¾	29⅛ (11)	8
1.12- .429	AA	4.12	2.36	3	2	1.00-2.84	F	1035	7⅞	2.62	3	2.50	AB	AB	C	Pi	2000	Uni	Com	Fra	45	AL	Ele	30 3/16	19¾	28⅞ (12)	9
1.12- .429	AA	4.46	2.69	3	2	1.00x3.10	F	1035	7⅞	2.62	3	2.50	AB	AB	C	Pi	2000	Uni	Com	Fra	45	AL	Ele	30 3/16	19¾	28⅞ (12)	10
1.12- .429	AA	4.12	2.36	3	2	1.00-2.84	F	1035	7⅞	2.62	7	2.50	AB	AB	C	Pi	2000	Uni	Com	Fra	45	AL	Ele	38 3/16	19¾	28⅞ (12)	11
1.12 .429	AA	4.46	2.69	3	2	1.00x3.10	F	1035	7⅞	2.62	7	2.50	AB	AB	C	Pi	2000	Uni	Com	Fra	45	AL	Ele	38 3/16	19¾	28⅞ (12)	12
1.18- .486	AA	4.93	3.00	3	2	1.25-2.92	F	1035	9.50	3.41	7	3.00	AB	AB	C	Pi	2000	Uni	B-P	DeL	45	DR	Ele	42 11/16	27	35 11/16 (12)	13
1.18- .486	AA	4.93	3.00	3	2	1.25-2.92	F	1035	9.50	3.41	7	3.00	AB	AB	C	Pi	2000	...	B-P	DeL	45	DR	Ele	54 3/16 (11)	27 11/16	34 3/16 (12)	14
1.37- .476	AA	5.25	4.48	3	2	1.50-3.56	F	6140	11.00	4.87	7	3.00	AB	AB	C	Pi	2000	Uni	B-P	DeL	45	DR	Ele	46½	25¾	37 3/16 (12)	15
1.37- .476	AA	5.25	4.48	3	2	1.50-3.56	F	6140	11.00	4.87	7	3.00	AB	AB	C	Pi	2000	...	B-P	DeL	45	DR	Ele	61 11/16 (11)	29⅞	38⅞ (12)	16
2.16- .687	AA	9.31	19.19	3	2	2.75-5.53	F	1035	17.75	28.51	7	4.50	AB	AB	C	Pi	1800	Uni	P-S	DeL	45	D-N	E-G	86 11/16	38 11/16	62 3/16 (12)	17
2.16- .687	AA	9.31	19.19	3	2	2.75-5.53	F	1035	17.75	28.51	7	4.50	AB	AB	C	Pi	1800	...	P-S	DeL	45	D-N	E-G	114⅞ (11)	37 3/16	62 7/16 (12)	18
2.16- .687	AA	9.31	19.19	3	2	2.75-5.53	F	1035	17.75	28.51	7	4.50	AB	AB	C	Pi	1800	Uni	P-S	DeL	45	D-N	E-G	98⅝	48	82 3/16 (12)	19
1.87- .540	AA	6.75	6.70	3	2	1.75-4.50	F	1040	12.50	10.62	7	3.89	AB	AB	C	Pi	2000	Uni	Com	Com	45	L-D	E-G	58⅛	29 3/16	48⅛	20
1.87- .540	AA	6.75	6.70	3	2	1.75-4.50	F	1040	12.50	10.62	7	3.89	AB	AB	C	Pi	2000	...	Com	Com	45	L-D	E-G	83 3/16	30¼	48 3/16	21
1.87- .540	AA	6.75	6.70	3	2	1.75-4.50	F	1040	12.50	10.62	7	3.89	AB	AB	C	Pi	2000	...	Com	DeL	45	L-D	E-G	58⅛	32½	48⅛	22
1.87- .540	AA	6.75	6.70	3	2	1.75-4.50	F	1040	12.50	10.62	7	3.89	AB	AB	C	Pi	2000	...	Com	DeL	45	L-D	E-G	88⅞	36¼	48½	23
1.87- .540	AA	6.75	6.70	3	2	1.75-4.50	F	1040	12.50	10.62	9	3.89	AB	AB	C	Pi	2000	...	Com	DeL	45	L-D	E-G	73	30¼	48⅛	24
1.87- .540	AA	6.75	6.70	3	2	1.75-4.50	F	1040	12.50	10.62	9	3.89	AB	AB	C	Pi	2000	...	...	...	45	L-D	E-G	101¼	36⅛	48 3/16	25
1.87- .540	AA	6.75	6.70	3	2	1.75-4.50	F	1040	12.50	10.62	9	3.89	AB	AB	C	Pi	2000	...	...	...	45	L-D	E-G	83 11/16	32½	63⅝	26
1.87- .540	AA	6.75	6.70	3	2	1.75-4.50	F	1040	12.50	10.62	9	3.89	AB	AB	C	Pi	2000	...	...	...	45	L-D	E-G	101¼	36⅛	48 3/16	27
1.87- .540	AA	6.75	6.70	3	2	1.75-4.50	F	1040	12.50	10.62	5	3.75	AB	AB	C	Pi	2000	Com	Com	DeL	45	DR	Ele	44⅞	30 3/16	48¼	28
2.16- .687	AA	9.31	19.19	3	2	2.75-5.53	F	1035	17.75	28.51	7	4.50	AB	AB	C	Pi	1800	...	Pur	DeL	45	LB	E-G	88½	48	63⅝	29
2.16- .687	AA	9.31	19.19	3	2	2.75-5.53	F	1035	17.75	28.51	7	4.50	AB	AB	C	Pi	1800	...	Pur	DeL	45	LB	E-G	126⅝	48	72⅝	30
2.16 .687	AA	9.31	19.19	3	2	2.75-5.53	F	1035	17.75	28.51	9	4.69	AB	AB	C	Pi	1800	Den	Pur	DeL	45	LN	AEG	108¼	47 11/16	74 11/16	31
2.16 .687	AA	9.31	19.19	3	2	2.75-5.53	F	1035	17.75	28.51	9	4.69	AB	AB	C	Pi	1800	Den	Pur	DeL	45	LN	AEG	112⅝	47 11/16	74 11/16	32
1 11/16- .424	Alu	6.14	...	3	2	1.81-3.73	F	1045	10.25	...	5	2.75	Own	Own	C	Si	...	Den	Own	Pur	35	Own	G	58⅝	27¾	51⅝	33
1 11/16- .434	Alu	6.14	...	3	2	1.81-3.73	F	1045	10.25	...	5	3.50	Own	Own	C	Si	...	Den	Own	Pur	35	Own	G	68½	29 3/16	49⅞	34
1 11/16- .434	Alu	5.52	...	3	2	1.62-3.23	F	1045	10.25	...	7	3.50	Own	Own	C	Si	...	Den	Own	Pur	35	Own	G	76⅝	31 3/16	66⅝	35
2 1/16- .468	Alu	9.18	...	3	1	2.37-4.75	F	1045	15.00	...	5	3.75	Own	Own	C	Si	1750	Den	Own	Pur	35	Own	G	69 11/16	40	66⅝	36
2 1/16- .468	Alu	9.18	...	3	1	2.37-4.75	F	1045	15.00	...	7	3.75	Own	Own	C	Si	1750	Den	Own	Pur	35	Own	G	87½	42¾	67 3/16	37
2 1/16- .468	Alu	9.18	...	3	1	2.37-4.75	F	1045	15.00	...	5	3.75	Own	Own	C	Si	1750	Den	Own	Pur	35	Own	G	85	50¼	66½	38
2¼- .5625	Alu	8.18	...	3	1	4.62-2.09	F	1045	18.00	...	7	5.50	Own	Own	C	Si	...	Den	Own	Pur	35	O-D	A-El	112½	48¼	70½	39
2¼- .5625	Alu	8.18	...	3	1	4.62-2.09	F	1045	18.00	...	7	5.50	Own	Own	C	Si	...	Den	Own	Pur	35	O-D	A-El	108 3/16	48¼	70½	40
2¼- .5625	Alu	8.18	...	3	1	4.62-2.09	F	1045	18.00	...	5	5.50	Own	Own	C	Si	...	Den	Own	Pur	35	O-D	A-El	88 3/16	48¼	70½	41
2¼- .5625	Alu	8.18	...	3	1	4.62-2.09	F	1045	18.00	...	5	5.50	Own	Own	C	Si	...	Den	Own	Pur	35	O-D	A-El	88 3/16	48¼	70½	42
1.75- .422	NI	6.12	7.87	4	1	1.75-3.50	F	1045	11.50	6.43	4	3.00	AB	AB	C	Pi	2200	Vor	CB	Nug	45	AL	Ele	48	32	53	43
1.75- .422	NI	6.12	7.87	4	1	1.75-3.50	F	1045	11.50	6.43	6	3.00	AB	AB	C	Pi	2200	Vor	CB	Nug	45	AL	Ele	66	32	53	44
1.06- .375	AA	3.75	...	3	1	1.12-...	F	...	7.00	...	3	2.37	A-E	A-E	...	Si	(a)	Opt	...	...	...	...	Ele	31⅛	19⅞	30⅛	45
1.25- .328	AA	4.31	...	3	2	1.25	...	...	9.50	...	3	2.87	A-E	A-E	...	Si	(a)	...	...	...	...	...	Ele	33⅝	21 11/16	35	46
1.25- .328	AA	4.31	...	3	2	1.25-...	F	...	9.50	...	3	2.87	A-E	A-E	...	Si	(a)	...	...	...	...	...	Ele	33⅝	21 11/16	35	47
1.50- .437	AA	4.88	...	3	2	1.43-...	F	...	8.37	...	7	2.87	A-E	A-E	...	Si	(a)	Opt	...	...	...	...	Ele	47 1/16	27 1/16	37⅛	48
1.65- .546	AA	5.93	...	3	2	1.50-...	F	...	10.50	...	7	3.25	A-E	A-E	...	Si	(a)	Opt	...	...	...	...	Ele	51 11/16	31⅝	44 11/16	49
1.50- .437	AA	4.88	...	3	2	1.25-...	F	...	8.37	...	7	2.87	A-E	A-E	...	Si	(a)	Opt	...	...	...	...	Ele	...	...	...	50
1.65- .546	AA	5.93	...	3	2	1.50-...	F	...	10.50	...	7	3.25	A-E	A-E	...	Si	(a)	Opt	...	...	...	...	Ele	...	...	...	51
1.37- .406	CI	5.04	5.70	3	2	1.49-3.37	F	...	9.50	6.6	7	3.87	Own	Own	...	Mu	...	Den	Com	Nug	45	L-D	Ele	48⅝ (2)	28¾	39 3/16 (3)	52
1.75- .500	CI	6.25	10.56	3	2	1.99-4.09	F	...	12.00	10¼	5	4.50	Own	Own	...	Mu	...	Den	Com	Nug	45	L-D	Ele	43 1/32 (2)	29⅝	47 11/16 (3)	53
1.75- .500	CI	6.25	10.56	3	2	1.99-4.09	F	...	12.00	10¼	7	4.50	Own	Own	...	Mu	...	Den	Com	Nug	45	L-D	Ele	57 1/32 (2)	29⅝	47 11/16 (3)	54
1.75- .500	Alu	6.25	7.21	3	2	1.99-4.09	F	...	12.00	10¼	7	4.50	Own	Own	...	Mu	...	Den	Com	Nug	45	L-D	Ele	60 11/32 (2)	30 3/16	47 11/16 (3)	55
1.56- .420	Alu	6.25	8.75	3	1	1.99-4.34	F	...	12.00	10½	7	4.50	Own	Own	...	Mu	...	Den	Com	AM	45	L-D	Ele	61 1/32 (2)	28⅞	49 3/16	56
1.56- .420	Alu	6.25	8.65	3	1	1.99-4.34	F	...	12.00	10½	7	4.50	Own	Own	...	Mu	...	Den	Com	AM	45	L-D	Ele	60 1/32 (2)	32⅝	48 11/16 (3)	57
1.75- .500	Alu	6.25	8.75	3	1	1.99-4.34	F	...	12.00	10.50	7	4.50	Own	Own	...	Mu	...	Den	Com	AM	45	L-D	Ele	57 1/32 (2)	27⅝	47 11/16 (3)	58
2.75- .718	CI	10 11/16	38.07	5	2	2⅞-6.00	F	...	18.00	...	7	5.50	Own	Own	...	Mu	...	Den	Nug	Nug	45	...	A-El	96	44⅝	58⅝	59
1.75- .500	CI	6.25	10.5	3	1	1.99-4.34	F	...	12	10.5	5	4.50	Own	Own	...	Mu	...	Den	Com	AM	45	L-D	Ele	43 1/32	29⅝	47 11/16	60
1.75- .500	AL	6.25	8.65	3	1	1.99-4.34	F	...	12	10.5	7	4.50	Own	Own	...	Mu	...	Den	Com	AM	45	L-D	Ele	60 11/32	30 3/16	47 11/16	61
1.56- .420	AL	6.25	8.65	3	1	1.99-4.34	F	...	12	10.5	7	4.50	Own	Own	...	Mu	...	Den	Com	AM	45	L-D	Ele	60 1/32	32⅝	48 11/16	62
1.56- .420	AL	6.25	8.65	3	1	1.99-4.34	F	...	12	...	7	5.00	Own	Own	...	Mu	...	Den	Pur	Nug	45	L-D	Ele	73	41	57	63
1.56- .420	AL	6.25	8.65	3	1	1.99-4.34	F	...	12	...	7	5.00	Own	Own	...	Mu	...	Den	Pur	Nug	45	L-D	Ele	73	42	57	64
...	CI	...	...	3	2	...	...	...	...	...	2	2.00	Own	Own	C	Si	2300	AM	Fra	Fra	...	...	...	...	...	...	65
...	CI	...	...	3	2	...	...	...	...	...	2	2.75	Own	Own	C	Si	2300	AM	Fra	Fra	...	...	E-H	36¼	24	46	66
...	CI	...	...	3	2	...	...	...	...	...	2	2.75	Own	Own	C	Si	2300	AM	Fra	Fra	...	...	E-H	36¼	24	46	67
...	CI	...	...	3	2	...	...	...	...	...	3	2.75	Own	Own	C	Si	2300	AM	Fra	Fra	...	...	E-H	44⅝	28	45	68
...	CI	...	...	3	2	...	...	...	...	...	3	2.75	Own	Own	C	Si	2300	AM	Fra	Fra	...	...	E-H	44⅝	28	45	69
...	CI	...	...	3	2	...	...	...	...	...	4	2.75	Own	Own	C	Si	2300	AM	Fra	Fra	...	...	E-H	54	30	46½	70
...	CI	...	...	3	2	...	...	...	...	...	4	2.75	Own	Own	C	Si	2300	AM	Fra	Fra	...	...	E-H	54	30	46½	71
...	CI	...	...	3	2	...	...	...	...	...	7	3.18	Own	Own	C	Si	2300	AM	Fra	Fra	...	...	E-H	60½	30	46½	72
...	CI	...	...	3	2	...	...	...	...	...	7	3.18	Own	Own	C	Si	2300	AM	Fra	Fra	...	...	E-H	60½	30	46½	73
1.00-	AA	...	...	3	1	...	...	...	...	...	2	2.00	AC	DA	C	Pi	2000	AC	AC	Pur	45	...	E-H	18	18	21⅛	74
...	AA	...	...	3	1	...	...	...	...	...	2		AC	DA	C	Pi	2000	AC	AC	Pur	45	...	E-H	30	23	34	75
...	CI	...	...	5	2	...	...	...	...	...	...	5.50	Own	Own	C	Mu	2500	...	...	...	45	...	A	131	34	67	76
1.25- .305	AT	6.00	7.70	4	2	1.50-3.62	F	1141A	10.12	6.90	3	3.50	Own	Own	C	Mu	600	AC	AC	AC	45	DR	Ele	31	27⅝	38⅝**	77
1.25- .305	AT	6.00	7.70	4	2	1.50-3.62	F	1141A	10.12	6.90	4	3.50	Own	Own	C	Mu	600	AC	AC	AC	45	DR	Ele	37⅛	29¼	39 1/32**	78
1.25- .305	AT	6.00	7.70	4	2	1.50-3.62	F	1141A	10.12	6.90	5	3.50	Own	Own	C	Mu	600	AC	AC	AC	45	DR	Ele	42⅞	29¼	40 1/32**	79

For abbreviations, see pages 156 and 157

For Directory of the Manufacturers listed above, see page 63.

AUTOMOTIVE DIESEL AND OTHER

Line Number	Engine Make and Model	Built Under License from	Designed for	Type	Number of Cylinders Bore and Stroke (In.)	Cylinder Liners—Type	Cycle	Piston Displacement (Cu. In.)	GENERAL: With Bare Engine: Maximum Brake Hp. at Specified R.P.M.	With Standard Accessories: Max. Intermittent Hp. at Specified R.P.M.	With Standard Accessories: Continuous Sustained Hp. at Specified R.P.M.	Compression Ratio—to 1	Max. Combustion Pressure (Lb. per Sq. In.)	B.M.E.P. at Continuous Hp. (Lb. per Sq. In.)	Weight per Continuous Hp. (Lb.) ♦	Max. Torque in Lb. Ft. at Specified R.P.M.	Shipping Weight (Lb.): Automotive or Industrial	Shipping Weight (Lb.): Marine	VALVES: Arrangement	Intake Port Diameter and Lift (In.)
	General Motors, Cont.																			
1	6-71	Own	T,B,Tr,I,M	DI	6-4¼x5	D	2	426		200-2000*	145-1800*	17.00	1000	74	11.0	600-1200	1655	Vwg	VI	No Valves
2	Twin 4	Own	I	DI	8-4¼x5	D	2	567		267-2000*	192-1800*	17.00	1000	74	24.5	1400-685Sh	4700		VI	No Valves
3	Twin 6	Own	I,M	DI	12-4¼x5	D	2	851		400-2000*	290-1800*	17.00	1000	74	18.6	2100-685Sh	5400	Vwg	VI	No Valves
4	Tandem Twins 6	Own	M	DI	12-4¼x5	D	2	851		400-2000	290-1800	17.00	1000	74	26.0			Vwg	VI	No Valves
5	Quad 6	Own	I,M	DI	24-4¼x5	D	2	1702		800-2000*	580-1800*	17.00	1000	74	20.6	4200-685Sh	12000	Vwg	VI	No Valves
6	2-71	Own	MW	DI	2-4¼x5	D	2	142		55-2000	48-1800	17.00	980	74	27			Vwg	VI	No Valves
7	3-71	Own	MW	DI	3-4¼x5	D	2	213		85-2000	72-1800	17.00	980	74	28			Vwg	VI	No Valves
8	4-71	Own	MW	DI	4-4¼x5	D	2	284		113-2000	96-1800	17.00	980	74	25.0			Vwg	VI	No Valves
9	6-71	Own	MW	DI	6-4¼x5	D	2	426		170-2000	145-1800	17.00	980	74	18.3			Vwg	VI	No Valves
10	Twin 6	Own	MW	DI	12-4¼x5	D	2	851		340-2000	290-1800	17.00	980	74	20.0			Vwg	VI	No Valves
11	Tandem Twins 6	Own	MW	DI	12-4¼x5	D	2	851		340-2000	290-1800	17.00	980	74	26.0			Vwg	VI	No Valves
12	Quad 6	Own	MW	DI	24-4¼x5	D	2	1702		680-2000	580-1800	17.00	980	74	21.7			Vwg	VI	No Valves
13	Gray Marine Four D-157		M	PC	4-3⅜x4⅜	W	4	157	30-1800			15.00			34.2	108-1800		1100	VI	1.18- .273
14	Four D-260		M	PC	4-3⅞x5½	W	4	260	50-1800			15.00			27.2	167-1200		1400	VI	1.37- .248
15	Six D-572		M	PC	6-4⅜x6⅜	D	4	572	135-2200			15.00			13.0	401-1600		2750	VI	1.87-
16	Hallett AC1	Own	Tr,I	PC	1-3½x3⅝	N	4	35	6-1800	6-1800	5-1800	21.50	1000	80	44.0		220		VI	1.25- .315
17	DI-A	Own	I	PC	1-3⅞x4¼	N	4	50	9.5-1500	9-1500	8-1500	21.60	1000	84	57.0	32-1800	460	625	VI	1.62- .313
18	D2-M	Own	I	PC	2-3⅞x4¼	N	4	100	19.5-1500	19-1500	18-1500	21.60	1000	97	33.0	64-1800	600	760	VI	1.62- .318
19	Harnischfeger 187C		T,B,Tr,M,R,I	DI	1-4½x5½	W	2	87	28-1400	27-1400	20-1200	16.00	1200	76	47.5	105-800	950	1100	VI	No Valves
20	287C		T,B,Tr,M,R,I	DI	2-4½x5½	W	2	174	54-1400	53-1400	40-1200	16.00	1200	76	25.8	210-800	1030	1635	VI	No Valves
21	387C		T,B,Tr,M,R,I	DI	3-4½x5½	W	2	261	83-1400	80-1400	60-1200	16.00	1200	76	21.7	315-800	1300	2120	VI	No Valves
22	487C		T,B,Tr,M,R,I	DI	4-4½x5½	W	2	348	110-1400	105-1400	80-1200	16.00	1200	76	19.4	440-800	1550	2530	VI	No Valves
23	687C		T,B,Tr,M,R,I	DI	6-4½x5½	W	2	522	165-1400	156-1400	120-1200	16.00	1200	76	15.8	630-800	1900	3000	VI	No Valves
24	Hercules DIXC	Own	Tr,M,I	TC	2-4x4½	D	4	113	27-1800	23-1800	23-1800	15.50	750	92	23.9	81-1400	550		VI	1.62- .375
25	DIXD	Own	Tr,M,I	TC	2-4¼x4½	D	4	127	27.6-1600	23.5-1600	23.5-1600	15.50	750	92	25.9	91-1300	550		VI	1.62- .375
26	DIX4B	Own	T,B,Tr,M,R,I	TC	4-3¼x4	D	4	133	46-3000	39-3000	36-2400	15.00	825	89	15.2	98-1600	550		VI	1.37- .350
27	DIX4D	Own	T,B,Tr,M,R,I	TC	4-3⅝x4	D	4	165	57-3000	48-3000	45-2400	15.00	825	90	12.2	122-1600	550		VI	1.56- .350
28	DOOB	Own	T,Tr,M,I,B	TC	4-3¾x4½	D	4	193	62-2600	53-2600	41-1800	15.00	750	91	18.3	142-1400	750		VI	1.62- .375
29	DOOC	Own	T,Tr,M,I,B	TC	4-4x4½	D	4	226	70-2600	60-2600	47-1800	15.00	750	91	15.9	162-1400	750		VI	1.62- .375
30	DOOD	Own	T,Tr,M,I,B	TC	4-4¼x4½	D	4	255	79-2600	66-2600	53-1800	15.00	750	91	14.2	182-1400	750		VI	1.62- .375
31	DIX6D	Own	Tr,M,B,R,T,I	TC	6-3⅝x4	D	4	249	92-3000	78-3000	71-2400	15.50	825	94	10.9	192-1800	780		VI	1.56- .350
32	DJXB	Own	T,B,Tr,M,R,I	TC	6-3½x4½	D	4	260	77-2600	66-2600	51-1800	15.00	750	87	18.6	179-1300	950		VI	1.62- .375
33	DJXC	Own	T,B,Tr,M,R,I	TC	6-3¾x4½	D	4	298	83-2600	71-2600	59-1800	15.00	750	87	16.1	208-1300	950		VI	1.62- .375
34	DJXH	Own	T,B,Tr,M,I	TC	6-3¾x4½	D	4	298	99-2600	84-2600	66-1800	15.00	750	97	14.7	320-1300	930		VI	1.75- .375
35	DWXC	Own	T,B,Tr,M,R,I	TC	6-4x4¾	D	4	358	118-2600	100-2600	81-1800	15.00	750	100	16.7	284-1600	1350		VI	1.68- .395
36	DWXD	Own	T,B,Tr,M,R,I	TC	6-4¼x4¾	D	4	404	135-2600	115-2600	92-1800	15.00	750	100	14.7	320-1600	1350		VI	1.68- .395
37	DWXLD	Own	T,B,Tr,M,R,I	TC	6-4¼x5	D	4	426	142-2600	121-2600	90-1800	15.00	750	93	15.0	316-1600	1350		VI	1.68- .395
38	DWXLDF	Own	B,M,R	TC	6-4¼x5	D	4	426	142-2600	121-2600	90-1800	15.00	750	93	15.0	316-1600	1350		VI	1.68- .395
39	DRXB	Own	T,B,Tr,M,R,I	TC	6-4⅜x5¼	D	4	474	132-2200	112-2200	89-1600	15.00	750	94	18.0	340-1200	1600		VI	2.00- .395
40	DRXC	Own	T,B,Tr,M,R,I	TC	6-4⅝x5¼	D	4	529	147-2200	125-2200	100-1600	15.00	750	94	16.0	395-1200	1600		VI	2.00- .395
41	DFXB	Own	T,B,M,Tr,I	TC	6-5x6	D	4	707	190-2100	162-2100	136-1600	14.80	750	95	18.4	530-1350	2500		VI	2.37- .500
42	DFXC	Own	T,B,M,Tr,I	TC	6-5¼x6	D	4	779	204-2100	173-2100	149-1600	14.80	750	95	16.8	585-1350	2500		VI	2.37- .500
43	DFXD	Own	T,B,M,Tr,I	TC	6-5½x6	D	4	855	217-2100	184-2100	162-1600	14.80	750	94	15.4	645-1200	2500		VI	2.37- .500
44	DFXE	Own	T,B,Tr,M,R,I	TC	6-5⅝x6	D	4	895	228-2100	194-2100	170-1600	14.80	750	94	14.7	680-1200	2500		VI	2.37- .500
45	DFXH	Own	T,B,Tr,M,R,I	TC	6-5¾x6	D	4	935	260-2100	221-2100	187-1600	14.80	750	99	13.8	750-1200	2575		VI	2.60- .500
46	DFXHF	Own	B,M,R	TC	6-5¾x6	D	4	935	260-2100	221-2100	187-1600	14.80	750	99	13.8	750-1200	2575		..	2.60- .500
47	DNX-V8	Own	T,B,Tr,M,I	TC	8-6¼x6	D	4	1468	400-2100	340-2100	278-1600	14.80	750	94	15.1	1100-1200	4200		VI	2.87- .500
48	DNX-V8S	Own	M,I	TC	8-6¼x6	D	4	1468	500-2100	425-2100	345-1600	14.80	750	115	13.9	1320-1400	4800		VI	2.87- .500
49	Hill 2R	Own	M,I	PC	2-3½x5½	D	4	106	19-1500	17.3-1500	16.6-1500	16.00		85	64	69-1200	1225	1300	VI	1.37- .372
50	4R	Own	M,I	PC	4-3½x5½	D	4	212	41-1500	36.3-1500	33-1500	16.00		85	44	142-1200	1615	1750	VI	1.37- .372
51	6R	Own	M,I	PC	6-3½x5½	D	4	317	63-1500	55-1500	50-1500	16.00		85	37.5	225-1200	2150	2300	VI	1.37- .372
52	International UD6	Own	Tr,I	PC	4-3⅞x5¼	D	4	248	43.5-1500	42-1500	33.6-1500	16.80		66	36.2	154- 800	1215		VI	1.50- .500
53	UD9A	Own	Tr,I	PC	4-4.4x5½	D	4	334	65-1600	62.5-1600	50-1600	15.70		67	30.0	231- 800	1500		VI	1.66- .500
54	UD14A	Own	Tr,I	PC	4-4¾x6½	W	4	461	79-1400	76-1400	60.8-1400	15.5		75	29.2	322- 850	1775		VI	1.78- .532
55	UD16	Own	Tr,I	PC	6-4.4x5.5	D	4	502	103-1800	100-1800	80-1800	16.00		70	27.3	330-1000	2190		VI	1.66- .532
56	UD18A	Own	Tr,I	PC	6-4¾x6½	W	4	691	131-1600	125-1600	100-1600	15.5		72	28.6	462- 850	2830		VI	1.78- .532
57	UD24	Own	Tr,I	PC	6-5¾x7	D	4	1091	191-1375	180-1375	144-1375	15.20		76	26.6	775- 800	3825		VI	2.31- .625
58	Kermath 2-127		M	TC	2-4¼x4½	D	4	127	28-1800	27-1800	20-1800	15.50	750	78	43.5	81-1400		870	VI	1.62- .375
59	4-226		M	TC	4-4x4½	D	4	226	70-2600	60-2600	50-2000	14.50	500	66	24.5	162-1400		1200	VI	1.62- .375
60	6-298		M	TC	6-3¾x4½	D	4	298	83-2600	70-2200	60-1900	14.50	500	64	21.5	208-1500		1355	VI	1.62- .375
61	6-474		M	TC	6-4⅜x5¼	D	4	474	132-2200	110-2000	95-1800	14.50	475	79	24.7	350-1300		2100	VI	2.00- .385
62	6-895		M	TC	6-5⅝x6	D	4	895	228-2100	195-2100	170-1600	14.50	750	94	24.5	680-1200		3800	VI	2.37- .500
63	Mack END-457	Lanova	T	TC	6-4¼x5⅜	D	4	457	112-2200	103-2200		13.86	1000	108		328-1300	1887		VI	1.56- .459
64	END-510		T,B	TC	6-4 7/16x5½	D	4	510	138-2400	123-2400		14.92	1000	108		345-1400	1939		VI	1.78- .461
65	END-672	Lanova	T,B	TC	6-4⅞x6	D	4	672	165-2000	154-2000		14.62	1000	108		480-1200	2301		VI	1.90- .500
66	Murphy ME-4	Own	M,I	DI	4-5¾x6½	W	4	675		105-1200	90-1200	16.00		88	49.5	472- 900	♦4450	♠6650	V2	1.62- .500
67	11	Own	M,I	DI	4-5¾x6½	W	4	675		110-1200	100-1200	16.0		98	44.5	530- 800	♦4450	♠6650	V2	1.62- .500
68	*111	Own	M,I	DI	4-5¾x6½	W	4	675		125-1200	115-1200	16.0		112	40.1	560-1050	♦4625	♠6825	V2	1.62- .500
69	12	Own	M,I	DI	4-6x6½	W	4	735		120-1200	110-1200	16.00		99	40.5	600- 750	♦4450	♠6650	V2	1.62- .500
70	*112	Own	M,I	DI	4-6x6½	W	4	735		140-1200	125-1200	16.0		112	37.0	640- 950	♦4625	♠6825	V2	1.62- .500
71	20	Own	M,I	DI	6-5½x6½	W	4	927		150-1200	135-1200	16.0		96	38.5	710- 600	♦5200	♠8000	V2	1.37- .500
72	*120	Own	M,I	DI	6-5½x6½	W	4	927		160-1200	145-1200	16.0		103	37.8	740- 600	♦5465	♠8265	V2	1.37- .500
73	21	Own	M,I	DI	6-5¾x6½	W	4	1013		165-1200	150-1200	16.00		98	34.7	825- 600	♦5200	♠8000	V2	1.62- .500
74	*121	Own	M,I	DI	6-5¾x6½	W	4	1013		190-1200	170-1200	16.0		111	32.2	860- 850	♦5465	♠8265	V2	1.62- .500
75	22	Own	M,I	DI	6-6x6½	W	4	1103		180-1200	165-1200	16.00		99	31.5	920- 600	♦5200	♠8000	V2	1.62- .500
76	*122	Own	M,I	DI	6-6x6½	W	4	1103		210-1200	190-1200	16.00		114	28.8	950- 900	♦5465	♠8265	V2	1.62- .500
77	Red Wing DO		M	TC	4-4¼x4½	D	..	255	79-2600	75-2400	58-1600	15.00	750	91		182-1400			VI	1.62- .375
78	42-54HP		M	DI	4-4x5	W	4	251	55-2200	54-2000	43-1500	5.90	500	65	25.8	155-1000		1100	VI	1.62- .445
79	55-60HP		M	DI	4-4⅝x5¼	W	4	353	62-1600	59-1600	55-1400	5.60	500	65	21.8	230- 800		1200	VI	1.75- .450
80	100-125HP		M	DI	6-4½x5½	W	4	525	128-2100	125-2100	106-1500	5.80	500	74	17.0	383-1000		1800	VI	1.87- .530
81	D6-160		M	TC	6-5¼x6	W	4	779	168-2000	138-2000	102-1400	17.50	750	80		600-1000			VI	2.25- .500
82	D6-200		M	TC	6-6¼x6½	W	4	1197	225-1600	165-1600	152-1300	16.50	750	83		845-1000			VI	2.37- .656
83	Scripps 7000-1, 2, 3		M	TC	4-4¼x4½	D	4	255	79-2600	68-2600	53-1800	15.00	750	91	23.1	185-1400		1200	VI	1.62- .375
84	8500-1, 2, 3		M	TC	6-3¾x4½	D	4	298	84-2600	71-2600	59-1800	15.00	750	88	21.1	208-1500		1435	VI	1.62- .375

For abbreviations, see pages 156 and 157

For Directory of the Manufacturers listed above, see page 63.

HEAVY OIL ENGINES—*Continued*

Valves: Exhaust Port Diameter and Lift (In.)	Pistons: Material	Pistons: Length (In.)	Pistons: Weight with Rings and Pin (Lb.)	Pistons: No. of Compression Rings	Pistons: No. of Oil Rings	Piston Pin: Diameter and Length (In.)	Piston Pin: Locked in—	Connecting Rods: Material (S. A. E. No.)	Connecting Rods: Center to Center Length (In.)	Connecting Rods: Weight with Cap and Bushing (Lb.)	Main Bearings: Number	Main Bearings: Diameter (In.)	Injection System: Make of Pump	Injection System: Make of Valve	Injection System: Valve Type—Open or Closed	Injection System: Orifices	Injection System: Pressure—Nozzle Opening (Lb. per Sq. In.)	Air Cleaner—Make	Fuel Filter—Make	Lubricant Filter—Make	Minimum Recommended Cetane Number of Fuel	Starting Method: Make	Starting Method: Type	Overall Dimensions: Length—Fan to Flywheel (In.)	Overall Dimensions: Width (In.)	Overall Dimensions: Height—To Top of Air Cleaner (In.)	Line Number
1.25- .305	AT	6.00	7.70	4	2	1.50-3.62	F	1141A	10.12	6.90	7	3.50	Own	Own	C	Mu	600	AC	AC	AC	45	DR	Ele	54 1/16	29 1/4	41 1/4**	1
1.25- .305	AT	6.00	7.70	4	2	1.50-3.62	F	1141A	10.12	6.90	10	3.50	Own	Own	C	Mu	600	AC	AC	AC	45	DR	Ele	66 1/4 (15)	56 (15)	57 11/16 (15)‡‡	2
1.25- .305	AT	6.00	7.70	4	2	1.50-3.62	F	1141A	10.12	6.90	14	3.50	Own	Own	C	Mu	600	AC	AC	AC	45	DR	Ele	79 3/4 (15)	56 (15)	57 11/16 (15)‡‡	3
1.25- .305	AT	6.00	7.70	4	2	1.50-3.62	F	1141A	10.12	6.90	14	3.50	Own	Own	C	Mu	600	AC	AC	AC	45	DR	Ele	129	37 1/4	57 1/32	4
1.25- .305	AT	6.00	7.70	4	2	1.50-3.62	F	1141A	10.12	6.90	28	3.50	Own	Own	C	Mu	600	AC	AC	AC	45	DR	Ele	175 (15)	56 (15)	66 5/8 (15)‡‡	5
1.25- .305	AT	6.00	7.70	4	2	1.50-3.62	F	1141A	10.12	6.90	3	3.50	Own	Own	C	Mu	600	AC	AC	AC	45	DR	Ele	42 11/16	30 1/16	35 11/16*	6
1.25- .305	AT	6.00	7.70	4	2	1.50-3.62	F	1141A	10.12	6.90	4	3.50	Own	Own	C	Mu	600	AC	AC	AC	45	DR	Ele	Vwg 51 1/8	32 11/16	Vwg 40 1/4*	7
1.25- .305	AT	6.00	7.70	4	2	1.50-3.62	F	1141A	10.12	6.90	5	3.50	Own	Own	C	Mu	600	AC	AC	AC	45	DR	Ele	Vwg 56 7/8	33 1/4	Vwg 40 1/4*	8
1.25- .305	AT	6.00	7.70	4	2	1.50-3.62	F	1141A	10.12	6.90	7	3.50	Own	Own	C	Mu	600	AC	AC	AC	45	DR	Ele	Vwg 66 3/4	33 1/4	Vwg 40 1/4*	9
1.25- .305	AT	6.00	7.70	4	2	1.50-3.62	F	1141A	10.12	6.90	14	3.50	Own	Own	C	Mu	600	AC	AC	AC	45	DR	Ele	70 11/16	59 3/4	54 1/16‡‡	10
1.25- .305	AT	6.00	7.70	4	2	1.50-3.62	F	1141A	10.12	6.90	14	3.50	Own	Own	C	Mu	600	AC	AC	AC	45	DR	Ele	129	37 1/4	57 1/32	11
1.25- .305	AT	6.00	7.70	4	2	1.50-3.62	F	1141A	10.12	6.90	28	3.50	Own	Own	C	Mu	600	AC	AC	AC	45	DR	Ele	128	59 3/4	54 1/16‡‡	12
1.06- .273	AA	3.75	......	3	2	1.12-2.75	F	1035	7.00	......	3	2.47	AB	AB	...	Pi	1800	Own	ACB	Mic	45	AL	Ele	49 1/16	20 11/16	30 11/16	13
1.25- .248	AA	4.31	......	3	2	1.25-3.31	F	1035	9.50	......	3	2.87	AB	AB	...	Pi	1800	Own	ACB	Mic	45	AL	Ele	54 1/8	21 5/8	34 1/16	14
1.66-......	AA	6.00	......	3	2	1.50-4.00	F	1035	10.50	4.72	5	3.37	AB	AB	...	Pi	1800	Own	ACB	Mic	45	DA	Ele	66 1/16	26	40 5/8	15
1.25- .315	AA	......	2.25	3	1	1.31-2.96	F	4140	7.00	2.75	2	.....	AB	AB	...	Pi	1800	AM	Pur	Pur	36	......	Ha	26	15	24	16
1.62- .312	Alu	5.25	4.00	4	1	1.37-3.40	F	1045	9.00	4.67	2	.....	AB	AB	...	Pi	1600	AM	Pur	Pur	36	AL	Ele	24.13	24	28.87	17
1.62- .315	Alu	5.25	4.00	4	1	1.37-3.40	F	1045	9.00	4.67	2	.....	AB	AB	...	Pi	1600	AM	Pur	Pur	36	AL	Ele	41 1/8	23	31 1/4	18
2.30- .520	AA	6.36	6.75	3	2	1.75-3.85	F	1141	11.87	8.25	2	4.00	BB	BB	C	Si	3000	Don	F†	WiP	35	AI	A-EI	25 3/4	23 3/8	40 7/8	19
2.30- .520	AA	6.36	6.75	3	2	1.75-3.85	F	1141	11.87	8.25	3	4.00	BB	BB	C	Si	3000	Don	F†	WiP	35	AI	A-EI	32 1/4	28 1/4	40 7/8	20
2.30- .520	AA	6.36	6.75	3	2	1.75-3.85	F	1141	11.87	8.25	4	4.00	BB	BB	C	Si	3000	Don	F†	WiP	35	AI	A-EI	38 7/8	28 1/4	40 7/8	21
2.30- .520	AA	6.36	6.75	3	2	1.75-3.85	F	1141	11.87	8.25	5	4.00	BB	BB	C	Si	3000	Don	F†	WiP	35	AI	A-EI	45 1/8	28 1/4	40 7/8	22
2.30- .520	AA	6.36	6.75	3	2	1.75-3.85	F	1141	11.87	8.25	7	4.00	BB	BB	C	Si	3000	Don	F†	WiP	35	AI	A-EI	59 1/16	28 1/4	40 7/8	23
1.12- .375	Alu	4.84	4.00	4	2	1.18-3.45	F	CNM	8.00	5.31	2	3.00	AB	AB	C	Pi	1450	......	......	......	45	DR	EAH	27 11/16 (2)	16 5/8	36 1/4	24
1.12- .375	Alu	4.84	4.47	4	2	1.18-3.70	F	CNM	8.00	5.31	2	3.00	AB	AB	C	Pi	1450	......	......	......	45	DR	EAH	27 11/16 (2)	16 5/8	36 1/4	25
1.12- .350	Alu	4.03	3.20	3	2	1.12-2.62	F	CNM	7.75	4.20	5	2.75	AB	AB	C	Pi	1650	......	......	......	45	LDA	AEL	20 1/16	21	32 1/2	26
1.12- .350	Alu	4.03	3.20	3	2	1.12-2.87	F	CNM	7.75	4.20	5	2.75	AB	AB	C	Pi	1650	......	......	......	45	LDA	AEL	20 1/16	21	32 1/2	27
1.12- .375	Alu	4.84	3.56	4	2	1.18-3.20	F	CNM	8.00	5.31	5	3.00	AB	AB	C	Pi	1650	......	......	......	45	LDA	EGA	32 1/16 (2)	22 7/8	36	28
1.12- .375	Alu	4.84	4.00	4	2	1.18-3.45	F	CNM	8.00	5.31	5	3.00	AB	AB	C	Pi	1650	......	......	......	45	LDA	EGA	32 1/16 (2)	22 7/8	36	29
1.12- .375	Alu	4.84	4.47	4	2	1.18-3.70	F	CNM	8.00	5.31	5	3.00	AB	AB	C	Pi	1650	......	......	......	45	LDA	EGA	32 1/16 (2)	22 7/8	36	30
1.12- .350	Alu	4.03	3.20	3	2	1.12-2.87	F	CNM	7.75	4.20	7	2.75	AB	AB	C	Pi	1650	......	......	......	45	LDA	A-EI	38	21	32 1/2	31
1.12- .375	Alu	4.84	3.12	4	2	1.18-2.95	F	CNM	8.00	5.31	7	3.00	AB	AB	C	Pi	1650	......	......	......	45	LDA	EGA	39 (2)	22 1/16	32 1/2	32
1.12- .375	Alu	4.84	3.56	4	2	1.18-3.20	F	CNM	8.00	5.31	7	3.00	AB	AB	C	Pi	1650	......	......	......	45	LDA	EGA	39 (2)	22 1/16	32 1/2	33
1.31- .375	Alu	4.84	3.56	3	2	1.18-3.20	F	CNM	8.00	5.31	7	3.00	AB	AB	C	Pi	1650	......	......	......	45	LDA	EGA	39 (2)	22 1/16	33 1/2	34
1.25- .395	Alu	4.84	4.00	3	2	1.50-3.62	F	CNM	8.50	7.31	7	3.50	AB	AB	C	Pi	1650	......	......	......	45	LDA	EGA	48 11/16 (2)	25 3/4	36 1/2	35
1.25- .395	Alu	4.84	4.47	3	2	1.50-3.62	F	CNM	8.50	7.00	7	3.50	AB	AB	C	Pi	1650	......	......	......	45	LDA	EGA	48 11/16 (2)	25 3/4	36 1/2	36
1.25- .395	Alu	4.84	4.47	3	2	1.50-3.62	F	CNM	8.50	7.00	7	3.50	AB	AB	C	Pi	1650	......	......	......	45	LDA	AEG	48 11/16	25 3/4	36 5/8	37
1.25- .395	Alu	4.84	4.47	3	2	1.50-3.62	F	CNM	8.50	7.00	7	3.50	AB	AB	C	Pi	1650	......	......	......	45	LDA	AEG	56 11/16	39 7/8	17 3/4	38
1.37- .395	Alu	6.84	7.09	4	2	1.62-3.75	F	CNM	9.37	8.59	7	3.50	AB	AB	C	Pi	1650	......	......	......	45	LDA	AEG	46 1/16 (2)	27	38 3/8	39
1.37- .395	Alu	6.84	7.93	4	2	1.62-3.93	F	CNM	9.37	8.59	7	3.50	AB	AB	C	Pi	1650	......	......	......	45	LDA	EGA	46 1/16 (2)	27	38 3/8	40
1.62- .500	Alu	7.53	9.94	4	2	2.00-4.18	F	CNM	12.00	13.75	7	4.50	AB	AB	C	Pi	2000	......	......	......	45	LDA	EGA	62 11/16 (2)	30 5/8	48 1/16	41
1.62- .500	Alu	7.53	11.09	4	2	2.00-4.42	F	CNM	12.00	13.75	7	4.50	AB	AB	C	Pi	2000	......	......	......	45	LDA	EGA	62 11/16 (2)	30 5/8	48 1/16	42
1.62- .500	Alu	7.53	12.37	4	2	2.00-4.65	F	CNM	12.00	13.75	7	4.50	AB	AB	C	Pi	2000	......	......	......	45	LDA	EGA	62 11/16	30 5/8	48 1/16	43
1.62- .500	Alu	7.53	12.34	4	2	2.00-4.65	F	CNM	12.00	13.75	7	4.50	AB	AB	C	Pi	2000	......	......	......	45	LDA	EGA	62 11/16 (2)	30 5/8	48 1/16	44
1.90- .500	Alu	7.53	12.60	4	2	2.00-4.90	F	CNM	12.00	13.75	7	4.50	AB	AB	C	Pi	2000	......	......	......	45	LDA	EGA	62 11/16 (2)	30 5/8	48 1/16	45
1.62- .500	Alu	7.53	12.34	4	2	2.00-4.65	F	CNM	12.00	13.75	7	4.50	AB	AB	C	Pi	2000	......	......	......	45	LDA	EGA	61 1/2	48 1/16	31 5/8	46
2.12- .500	Alu	7.53	12.90	4	2	2.00-5.40	F	CNM	13.25	......	5	4.50	AB	AB	C	Pi	2000	......	......	......	45	LD	EGA	67 1/16	42	56 1/2	47
2.12- .500	Alu	7.53	12.90	4	2	2.00-5.40	F	CNM	13.25	......	5	4.50	AB	AB	C	Pi	2000	......	......	......	45	LD	EGA	67	42	56 5/8	48
1.37- .372	Lyn	4.67	2.83	3	2	1.50-2.72	F	4140	13.25	7.3	3	2.93	AB	A-E	C	Pi	1800	Uni	Fram	Cun	45	AL	E-H	36	25	40	49
1.37- .372	Lyn	4.67	2.83	3	2	1.50-2.72	F	4140	13.25	7.3	5	2.93	AB	A-E	C	Pi	1800	Uni	Fram	Cun	45	AL	Ele	47 1/2	25	43	50
1.37- .372	Lyn	4.67	2.83	3	2	1.50-2.72	F	4140	13.25	7.3	7	2.93	AB	A-E	C	Pi	1800	Uni	Fram	Cun	45	AL	Ele	56	27	45	51
1.31- .437	AA	5.70	4.41	3	2	1.31-3.25	F	1040	10.00	8.12	5	3.75	Own	Own	C	Si	700	Don	Pur	Pur	....	Own	Ha	38 1/2	23	39 1/16	52
1.47- .500	AA	6.44	6.25	3	2	1.50-3.71	F	1040	11.00	9.34	5	4.12	Own	Own	C	Si	700	Don	Pur	Pur	....	Own	Ha	41 1/2	24	42 1/2	53
1.53- .532	AA	6.19	7.36	4	2	1.62-4.10	F	1040	13.25	12.72	5	3.25	Own	Own	C	Si	700	Don	Pur	Pur	....	Own	Ha	47 1/16	27 1/4	47 1/2	54
1.41- .532	AA	6.44	6.25	3	2	1.50-3.71	F	1040	11.00	9.34	7	3.56	Own	Own	C	Si	700	Don	Pur	Pur	....	Own	Ha	56 1/16	29 1/16	44 1/2	55
1.53- .532	AA	6.19	7.36	4	2	1.62-4.10	F	1040	13.25	12.72	7	3.50	Own	Own	C	Si	700	Don	Pur	Pur	....	Own	Ha	60 1/4	29 1/4	48 1/2	56
1.87- .625	AA	7.50	12.75	3	2	1.87-4.99	F	1040	13.25	16.73	7	4.12	Own	Own	C	Si	700	Don	Pur	Pur	....	DR	GS	70	30 1/2	54 5/8	57
1.12- .375	Alu	4.84	4.00	4	2	....	...	CNM	8.00	5.31	2	....	AB	AB	C	Pi	1650	AC	Pur	DeL	....	DR	Ele	41 1/16	23	30 5/8	58
1.12- .375	Alu	4.84	4.00	4	2	....	...	CNM	8.00	5.31	...	....	AB	AB	C	Pi	1650	AC	Pur	Pur	....	DR	Ele	47 3/4	22 1/2	33	59
1.12- .375	Alu	4.84	3.56	4	2	....	...	CNM	8.00	5.31	...	....	AB	AB	C	Pi	1650	AC	Pur	Pur	....	DR	Ele	54 11/16	22 1/2	33	60
1.37- .395	Alu	6.84	7.09	4	2	....	...	CNM	9.37	8.59	...	....	AB	AB	C	Pi	1650	AM	Pur	Pur	....	DR	Ele	60 1/16	27 5/8	37 11/16	61
1.62- .500	Alu	7.53	12.39	4	2	2.00-4.65	F	CNM	12.00	13.75	...	....	AB	AB	C	Pi	2000	AM	Pur	Pur	....	DR	Ele	84 1/16	34 1/4	54 5/8	62
1.50- .458	AA	5.29	4.75	3	2	1.43-3.64	F	CM	10.50	5.80	7	3.50	AB	AB	C	Pi	1700	Ver	Pur	WGB	45	LN	Ele	49.34	29.25	47.0	63
1.41- .458	AA	6.17	4.82	3	2	1.43-3.82	F	CM	10.50	5.80	7	3.50	AB	AB	C	Pi	1700	Ver	Pur	WGB	45	L-D	Ele	47.46	32.43	42.18	64
1.66- .500	AA	5.62	6.50	3	2	1.62-4.21	F	CM	11.25	7.70	7	4.00	AB	AB	C	Pi	1700	Ver	Pur	WGB	45	L-D	Ele	56.93	31.28	46.28	65
1.62- .500	CI	7.75	22.2	4	2	2.12-4.73	F	1045	12.50	17.75	5	4.00	Own	Own	...	Mu	....	Don	Own	Own	45	......	AEG	57 1/4	37	63 1/16	66
1.62- .500	CI	7.75	22.2	4	2	2.12-4.73	F	1045	12.50	17.75	5	4.00	Own	Own	...	Mu	....	Don	Own	Own	45	......	AEG	58 11/16	37	62 7/8	67
1.62- .500	CI	7.75	22.2	4	2	2.12-4.73	F	1045	12.50	17.75	5	4.00	Own	Own	...	Mu	....	Don	Own	Own	45	......	AEG	58 11/16	37	62 7/8	68
1.62- .500	CI	7.75	23.7	4	2	2.12-4.98	F	1045	12.50	17.75	5	4.00	Own	Own	...	Mu	....	Don	Own	Own	45	......	AEG	58 11/16	37	62 7/8	69
1.62- .500	CI	7.75	23.7	4	2	2.12-4.98	F	1045	12.50	17.75	5	4.00	Own	Own	...	Mu	....	Don	Own	Own	45	......	AEG	58 11/16	37	62 7/8	70
1.37- .500	CI	7.75	19.7	4	2	2.12-4.73	F	1045	12.50	17.75	7	4.00	Own	Own	...	Mu	....	Don	Own	Own	45	......	AEG	75 1/16	37	60 1/2	71
1.37- .500	CI	7.75	19.7	4	2	2.12-4.73	F	1045	12.50	17.75	7	4.00	Own	Own	...	Mu	....	Don	Own	Own	45	......	AEG	75 1/16	37	54 11/16	72
1.62- .500	CI	7.75	22.2	4	2	2.12-4.73	F	1045	12.50	17.75	7	4.00	Own	Own	...	Mu	....	Don	Own	Own	45	......	AEG	76 1/8	37	60 1/2	73
1.62- .500	CI	7.75	22.2	4	2	2.12-4.73	F	1045	12.50	17.75	7	4.00	Own	Own	...	Mu	....	Don	Own	Own	45	......	AEG	76 1/8	37	54 11/16	74
1.62- .500	CI	7.75	23.7	4	2	2.12-4.98	F	1045	12.50	17.75	7	4.00	Own	Own	...	Mu	....	Don	Own	Own	45	......	AEG	76 1/8	37	60 1/2	75
1.62- .500	CI	7.75	23.7	4	2	2.12-4.98	F	1045	12.50	17.75	7	4.00	Own	Own	...	Mu	....	Don	Own	Own	45	......	AEG	76 1/8 (2)	37	54 11/16	76
1.12- .375	Alu	4.84	4.47	4	2	1.18-3.70	F	CNM	8.00	5.31	5	3.00	AB	AB	C	Pi	1650	......	Pur	Pur	45	LN	Ele	50 5/8	25 3/4	35 1/16	77
1.25- .453	CI	5.12	4.30	3	1	1.12-3.06	F	1045	8.75	3.56	3	2.62	AB	Hes	O	Mu	750	......	Mic	Mic	....	DR	Ele	48 1/16	24	33 1/16	78
1.50- .450	CI	5.96	6.00	3	1	1.31-4.06	F	1045	10.50	5.30	3	2.37	AB	Hes	O	Mu	750	......	Mic	Mic	60	AL	Ele	52 11/16	21 1/4	38 5/8	79
1.37- .469	Alu	6.50	4.00	3	1	1.37-3.87	F	1045	10.25	5.31	7	3.25	AB	Hes	O	Mu	750	......	Mic	Mic	60	DR	Ele	78 3/4	29	41 1/16	80
1.81- .531	Alu	7.25	......	4	2	1.87-4.50	F	4145	11.75	......	7	4.25	AB	AB	C	Pi	2000	Opt	Com	Mic	80	DR	Ele	74 5/8	32 1/16	47 1/16	81
2.00- .656	Alu	......	......	3	2	2.18-5.37	F	4145	13.25	......	7	4.75	AB	AB	C	Pi	2000	Opt	Com	Mic	80	DR	Ele	88 1/16	34 5/8	51 11/16	82
1.12- .375	Alu	4.84	4.47	4	2	1.18-3.70	F	CNM	8.00	5.31	5	3.00	AB	AB	C	Pi	1650	AC	Pur	Pur	45	DR	Ele	48 1/4	24 1/4	22 3/4	83
1.12- .375	Alu	4.84	3.56	4	2	1.18-3.20	F	CNM	8.00	5.31	7	3.00	AB	AB	C	Pi	1650	AC	Pur	Pur	45	DR	Ele	53 1/16	24 1/4	22 5/8	84

For abbreviations, see pages 156 and 157

For Directory of the Manufacturers listed above, see page 63.

AUTOMOTIVE DIESEL AND OTHER

Line Number	ENGINE MAKE AND MODEL	Built Under License from	GENERAL: Designed for	Type	Number of Cylinders Bore and Stroke (In.)	Cylinder Liners—Type	Cycle	Piston Displacement (Cu. In.)	With Bare Engine: Maximum Brake Hp. at Specified R.P.M.	With Standard Accessories: Max. Intermittent Hp. at Specified R.P.M.	With Standard Accessories: Continuous Sustained Hp. at Specified R.P.M.	Compression Ratio—to 1	Max. Combustion Pressure (Lb. per Sq. In.)	B.M.E.P. at Continuous Hp. (Lb. per Sq. In.)	Weight per Continuous Hp. (Lb.) ♦	Max. Torque in Lb. Ft. at Specified R.P.M.	Shipping Weight (Lb.): Automotive or Industrial	Shipping Weight (Lb.): Marine	VALVES: Arrangement	Intake Port Diameter and Lift (In.)
1	Sheppard...14 and 14C	....	Tr,M,I	PC	1-3x4	N	4	28.0	5.4-1900	4.8-1900	3.50-1800	18.0	650	55	94.0	11-1500	330	425	VI	1.09- .209
2	..........7D, E	....	I,Tr	PC	1-4¼x5	W	4	71.0	15-2000	12-1800	11-1800	18.0	625	68	79.5	55-1000	875	......	VI	1.37- .313
3	..........13D, E & F	....	Tr,M,I	PC	2-4¼x5	W	4	142	33-2000	25-1800	22-1800	18.0	625	68	47.7	106-1200	1050	1500	VI	1.37- .313
4	..........6D, E & F	....	Tr,M,I	PC	3-4¼x5	W	4	213	50-2000	38-1800	34-1800	18.0	625	69	38.9	161-1200	1325	1750	VI	1.37- .313
5	..........12D, E & F	....	T,M,I	PC	6-4¼x5	W	4	426	100-2000	75-1800	67-1800	18.0	625	70	26.6	325-1200	1790	2330	VI	1.37- .313
6	Sterling..........VD6	....	M,R,I	....	6-8x9	W	4	2714	....	330-1200	325-1200	14.00	1000	80	28.2	1420-....	9160	8850	VI	2.37- .525
7	..........VD6S	....	M,R,I	....	6-8x9	W	4	2714	....	560-1200	495-1200	14.00	1000	120	20.2	2155-....	10000	9550	VI	2.37- .525
8	..........VD8S	....	M,R,I	....	8-8x9	W	4	3619	....	750-1200	660-1200	14.00	1000	120	18.0	2890-....	11900	11300	VI	2.37- .525
9	..........Viking DB4	....	M,I	TC	4-5½x7	W	4	665	....	90-1200	76-1200	11.80	750	75	60.7	475-1200	4550	4400	VI	2.19- .649
10	..........Viking DB6	....	M,I	TC	6-5½x7	W	4	998	....	170-1500	114-1200	11.80	750	75	45.6	737-1000	5950	5350	VI	2.19- .649
11	..........Viking DB8	....	M,I	TC	8-5½x7	W	4	1330	....	230-1500	152-1200	11.80	750	75	45.0	940-1000	7650	8600	VI	2.19- .649
12	Waukesha....180DAC	Own	T,Tr,I	TC	4-3⅝x3¾	W	4	129	35-2400	28-2400	22.4-1800	17.00	850	82	23.2	90-1400	520	......	VI	1.25- .312
13	..........190DLB	....	T,Tr,I	TC	6-3¾x4	W	4	265	64-2200	53-1800	42.5-1800	15.3	750	71	......	184-1200	......	......	VI	1.37- .359
14	..........140HK	Hes	I	DI	6-4½x5½	W	4	525	128-2250	109-2250	75-1500	5.80	500	74	21.0	383-1000	1550	......	VI	1.87- .531
15	..........148DK	....	T,I	TC	6-5¼x6	W	4	779	168-2000	138-2000	102-1400	17.5	750	80	21.0	530-1200	2150	......	VI	2.25- .500
16	..........145HK	Hes	I	DI	6-5¼x6	W	4	779	174-2000	148-2000	106-1400	5.60	500	77	17.6	560- 900	1865	......	VI	1.87- .594
17	..........6WAKH	Hes	I	DI	6-6¼x6½	W	4	1197	202-1800	162-1600	139-1300	5.20	500	71	23.0	811- 700	3200	......	VI	2.37- .656
18	..........6WAKD	....	T,I	TC	6-6¼x6½	W	4	1197	225-1600	185-1600	152-1300	16.5	750	83	22.3	845- 900	3400	......	VI	2.37- .656
19	..........6NKH	Hes	I	DI	6-7x8½	W	4	1962	226-1050	187-1050	160- 950	5.42	500	68	38.8	1350- 650	6200	......	VI	2.50- .713
20	..........6LRD	....	I	TC	6-8½x8½	W	4	2894	386-1060	359-1060	335- 900	16.00	800	110	35.8	2150- 600	12000	......	VI	3.75- .704

ABBREVIATIONS

*—Without fan or muffler.
♦—Based on automotive or industrial weight.
‡—With full equipment but without radiator or fan.
•—Supercharged.
°Bottom of gear box to top of heat exchanger.
••—To top of valve cover.
♦—Includes radiator.
†—Includes reverse and reduction gear.
‡‡—Bottom of base to highest point on engine.
(2)—Fan to flywheel housing.
(3)—To top of water outlet (highest point).
(4)—Also built in 5, 7 and 8 cyl. models.
(11)—Includes radiator.
(12)—From bottom of pan to air cleaner mounting flange.
(15)—Including radiator and gear box.
A—Air.
(a)—Excello 1500-Bosch 1800.
AA—Aluminum Alloy.
AB—American Bosch.
AC—AC Spark Plug Co.
ACB—AC or Bosch.
Ach—Air chamber.
A-E—American Bosch or Ex-Cell-O Corp.
AEG—Air, electric or auxiliary gasoline engine.
A-El—Air or Electric.
AI—Auto-Lite (electric), Ingersoll-Rand (air).
AL—Electric Auto-Lite Co.
Alu—Aluminum.
AM—Air-Maze Corp.
AT—Arma Steel, tin plated.
B—Buses.
BB—Bendix or Bosch.
B-P—Bosch or Purolator.
C—Closed.
CI—Cast Iron.
CM—Chromium molybdenum.
CNM—Chrome-nickel molybdenum.
Com—Commercial Filters Corp.
Cun—Cuno Engineering Corp.
D—Dry liners used.
DA—Delco-Remy and Auto-Lite.
DeL—DeLuxe Products Corp.
DI—Direct injection.
D-N—Delco-Remy or Novo.
Don—Donaldson Co.

AIRCRAFT GAS

Line Number	MAKE AND MODEL	ENGINE TYPE: Turbo-jet or Prop.	Single or Coupled	TAKE-OFF: Thrust (Lb)	TAKE-OFF: Prop. Shaft (Hp)	TAKE-OFF: RPM	TAKE-OFF: Fuel Consumption	NORMAL: Thrust (Lb)	NORMAL: Prop. Shaft (Hp)	NORMAL: RPM	NORMAL: Fuel Consumption	MAX. CRUISING: Thrust (Lb)	MAX. CRUISING: Prop Shaft (Hp)	MAX. CRUISING: RPM	MAX. CRUISING: Fuel Consumption	Propeller Gearing Type	COMPRESSOR: Type	No. of Stages	Pressure Comp. Ratio	Blade Root	TURBINE: No. of Stages	Blade Roots
	UNITED STATES																					
1	Allison..........T-38	TP	S		2750*	R	0.63†									P	A	17	6.30	Do	4	Do
2	..........T-40	TP	C		5500*	R	0.63†									P	A		6.30	Do		Do
3	..........J-35-A-17	TJ	S	5000	None	7800		4240	None	7400		4240	None	7400	1.05‡	N	A	11	5.00	Do	1	FT
4	..........J-33-A-23	TJ	S	4600	None	11750		3900	None	11250		3600	None	11000	1.12‡	N	Ce	1	4.40	In	1	FT
5	General Electric..........J-47	TJ	S	5200	None	7950		3700	None	7000			None			N	A					
6	Pratt & Whitney..........J-42	TJ	S	5000	None		1.12‡	4000	None		1.09‡	2700	None		1.11‡	N	Ce	1	4.30		1	
7	Westinghouse..........J-34-WE-22	TJ	S		None			2290	None			3000	None	12500	1.08‡	N	A	11			2	
8	Wright..........T-35	TP	S	(Data Restricted)																		
	GREAT BRITAIN																					
9	Armstrong-Siddeley..........Adder	TJ	S	1098	None	15000	0.74‡	738	None	14250	0.93‡	757	None	14250	0.82‡	N	A				1	
10	..........Mamba 2	TP	S	384	1270	15000	0.53†	160	1087	14000	0.54†	183	1625	15000	0.47†	P	A	10	5.00		2	
11	..........Double Mamba	TP	C	770	2540	15000	0.53†	255	2300	14000	0.52†	280	3500	15000	0.46†	P	A	10	5.00		2	
12	..........Python	TP	S	1150	3670	8000	0.50†	390	3260	7600	0.50†	220	3680	7600	0.48†	P	A	14	5.00		2	
13	Bristol..........Theseus	TP	S					825	2220	8200	0.87†						CA	2			1	
14	..........Proteus	TP	S					800	3200	10000	0.63†						CA	2			1	
15	De Havilland..........Goblin 2	TJ	S	3100	None	10200	1.28‡	1900	None	8700	1.30‡	2630	None	9700	1.27‡	N	Ce	1			1	
16	..........Goblin 3	TJ	S	3350	None	10750	1.18‡	2220	None	9500	1.18‡	2850	None	10250	1.16‡	N	Ce	1			1	
17	..........Goblin 4, 35	TJ	S	3500	None	10750	1.16‡	2300	None	9500	1.16‡	3000	None	10250	1.14‡	N	Ce	1			1	
18	..........Ghost 50	TJ	S	5000	None	10250	1.08‡	3300	None	9000	1.02‡	4300	None	9750	1.05‡	N	Ce	1			1	
19	Napier..........Naiad	TP	S	241	1500	18250		182	978	17000						P	A	12		FT	2	FT
20	..........Coupled Naiad	TP	C	482	2970	18250	0.48†	364	1936	17000	0.49†					P	A	12		FT	2	FT
21	Rolls-Royce..........Nene 2	TJ	S	5000	None			4800	None	12000	1.00‡	5000	None			N	Ce	1			1	
22	..........Derwent 5	TJ	S	3600	None	14700		3000	None	14000	1.00‡		None			N	Ce	1			1	

ABBREVIATIONS

♦—Booster pump.
*—Equivalent hp—thrust and prop shaft.
**—Width—52.8 in. height—42.4 in.
†—2 pumps used on Goblin 35.
‡‡—Width—45 in. height—25 in.
‡—Lb/hr/lb thrust.
†—Lb/hp/hr.
(a)—Included in main pump.
A—Axial.
AK—Aviation kerosene.
AR—Air Research.
Ben—Bendix.
C—Coupled.
CA—Centrifugal and axial.
Ce—Centrifugal.
Cy—Cylindrical.
DF—Direct flow.
Do—Dovetail.

For Directory of the Manufacturers listed above, see page 63.

HEAVY OIL ENGINES—*Concluded*

VALVES	PISTONS					PISTON PIN		CONNECTING RODS			MAIN BEARINGS		INJECTION SYSTEM									START-ING METHOD		OVERALL DIMENSIONS			
Exhaust Port Diameter and Lift (In.)	Material	Length (In.)	Weight with Rings and Pin (Lb.)	No. of Compression Rings	No. of Oil Rings	Diameter and Length (In.)	Locked in—	Material (S. A. E. No.)	Center to Center Length (In.)	Weight with Cap and Bushing (Lb.)	Number	Diameter (In.)	Make of Pump	Make of Valve	Valve Type—Open or Closed	Orifices	Pressure—Nozzle Opening (Lb. per Sq. In.)	Air Cleaner—Make	Fuel Filter—Make	Lubricant Filter—Make	Minimum Recommended Cetane Number of Fuel	Make	Type	Length—Fan to Flywheel (In.)	Width (In.)	Height—To Top of Air Cleaner (In.)	Line Number
1.00- .209	CI	3.81	2.28	3	2	1.06-2.50	F	1035	8.00	1.65	2	2.00	Own	Own	O	Si	1	AM	AC	Fra	40	AL	E-H	18⅛	20¾	29½	1
1.37- .313	CI	5.46	6.20	3	2	1.50-4.00	F	1035	10.87	6.00	2	2.75	Own	Own	O	Si	1	AM	Fra	Fra	40	AL	Opt	23	23	38	2
1.37- .313	CI	5.93	6.20	3	2	1.50-4.00	F	1035	10.87	6.00	3	2.75	Own	Own	O	Si	1	AM	Fra	Fra	40	AL	Opt	30	23	38	3
1.37- .313	CI	5.31	6.20	3	2	1.50-4.00	F	1035	10.87	6.00	4	2.75	Own	Own	O	Si	1	AM	Fra	Fra	40	AL	Ele	35	23	38	4
1.37- .313	CI	5.48	6.20	3	2	1.50-4.00	F	1035	10.87	6.00	7	3.18	Own	Own	O	Si	1	AM	Fra	Fra	40	AL	Ele	80	24	40	5
2.37- .525	Alu	10.25	30.50	4	2	3.00-6.93	F	1040	18.00	46.05	7	6.00	BB	BB	C	.....	3000	Opt	Win	Mic	50	LN	A-EI	....	....	....	6
2.37- .525	Alu	10.25	30.50	4	2	3.00-6.93	F	1040	18.00	46.05	7	6.00	BB	BB	C	.....	3000	Opt	Win	Mic	50	LN	A-EI	....	....	....	7
2.37- .525	Alu	10.25	30.50	4	2	3.00-6.93	F	1040	18.00	46.05	9	6.00	BB	BB	C	.....	3000	Opt	Win	Mic	50	LN	A-EI	....	....	....	8
1.81- .536	CI	8.00	15.00	4	2	2.12-4.50	F	1040	14.25	19.11	5	4.50	AB	AB	C	Pi	1600	Bur	DeL	Com	50	LN	Ele	....	....	....	9
1.81- .536	CI	8.00	15.00	4	2	2.12-4.50	F	1040	14.25	19.11	7	4.50	AB	AB	C	Pi	1600	Bur	DeL	Com	50	LN	Ele	....	....	....	10
1.81- .536	CI	8.00	15.00	4	2	2.12-4.50	F	1040	14.25	19.11	9	4.50	AB	AB	C	Pi	1600	Bur	DeL	Com	50	LN	Ele	....	....	....	11
1.00- .281	CI	4.75	3.28	3	2	1.25-2.75	F	1045	6.75	1.97	3	2.25	AB	AB	C	Pi	1800	Opt	Opt	Opt	45	Opt	Ele	30½	19	27 11/16	12
1.18- .362	CI	4.18	......	3	1	1.25-3.00	F	1046	6.75	......	4	2.62	AB	AB	C	Pi	1500	Opt	Fra	Mic	45	Opt	Ele	42⅝	22	29 1/16	13
1.37- .469	Alu	6.50	4.00	3	1	1.37-3.87	F	1045	10.25	6.31	7	3.25	AB	Hes	O	Mu	750	Opt	Mic	Mic	.....	Opt	Ele	53¾	21 11/16	41 11/16	14
1.81- .531	Alu	7.25	......	4	2	1.87-4.50	F	4145	11.75	......	7	4.25	AB	AB	C	Pi	2000	Opt	Com	Mic	50	DRW	E-G	55 11/16	25¾	46⅝	15
1.37- .531	Alu	7.25	6.44	3	1	1.62-4.87	F	1045	11.75	8.31	7	3.50	AB	Hes	O	Mu	750	Opt	Mic	Mic	.....	Opt	Ele	55 11/16	25¾	46⅝	16
2.00- .656	CI	8.37	11.00	3	1	1.87-5.50	F	1045	13.25	12.20	7	4.00	AB	Hes	O	Mu	780	Opt	Mic	Mic	.....	Opt	E-G	65⅝	30⅝	50⅞	17
2.00- .656	Alu	3.37	......	3	2	2.18-5.37	F	4145	13.25	......	7	4.75	AB	AB	C	Pi	2000	Opt	Com	Mic	50	DRW	E-G	65⅝	30⅝	50⅞	18
2.25- .710	CI	9.25	24.75	3	1	2.00-6.00	F	1045	15.37	19.60	7	3.75	AB	Hes	O	Mu	780	Opt	Mic	HC	.....	Opt	E-G	78	32⅝	57 3/16	19
2.75- .704	CI	11.34	67.50	4	2	3.00-7.00	F	4145	21.37	40.00	7	5.50	AB	AB	C	Pi	.....	Ver	Com	HC	45	Own	G	98	47	98	20

DR—Delco-Remy Div.
DRW—Delco or Waukesha.
EAH—Air, Electric, or Hand.
EGA—Electric aux. gas engine or Hand.
E-G—Electric or auxiliary gasoline engine.
E-H—Electric or hand.
Ele—Electric.
F—Floating.
Ff—Fulflo.
Fra—Fram Corp.
GS—Gasoline and spark ignition.
Ha—Hand.
HC—Honan-Crane Corp.
Hes—Hesselman.
I—Industrial.
HI—Horizontally In-head.
LB—Leece Neville or Buda.
L-D—Leece Neville or Delco-Remy.
LDA—Leece-Neville, Delco-Remy or Autolite.
LN—Leece Neville Co.
Lyn—Lynite.
M—Marine.
Mic—Michiana Products Corp.
MW—Marine Work Boat.
N—No or none.
Mu—Multiple.
NI—Nickel Iron.
Nug—Nugent.
O—Open.
O-D—Own or Delco-Remy.
Opt—Optional.
PC—Precombustion chamber.
Pi—Pintle.
P-S—Purolator or Stewart-Warner.
Pur—Purolator Products, Inc.
R—Railcars.
Sc—Scintilla Magneto Div.
Sh—Shaft torque; Shaft RPM.
Si—Single.
T—Trucks.
TC—Turbulence chamber.
Tr—Tractors.
Uni—United Air Cleaner Div.
VI—Vertically In-Head.
V2—Vertically in head, 2 inlets used.
Ver—Vortex.
Vwg—Varies with gear.
W—Wet liners used.
WGB—W.G.B. Oil Clarifier, In
WP—Winslow or Purolator.
Win—Winslow Filter.
WIP—Wix or Purolator.

TURBINES

COMBUSTION CHAMBERS				FUEL SYSTEM						IGNITION SYSTEM		LUBRI-CATION		MAKE OF COMPONENT PARTS					OVERALL DIMENSIONS			DRY WEIGHT		
																			Length (In.)					
Arrangement	No. Used	Material	Air Intake	No. of Pumps	No. of Emergency Pumps	Fuel Controls	Afterburning	Recommended Octane Rating of Fuel	No. of Fuel Nozzles per Combustion Chamber	No. of Ignitors	Type of Igniter	Sump Capacity (Pts)	Max. Oil Consumption (Pts/Hr)	Starter	Generator	Governor	Vacuum Pump	Fuel Pumps	With Extension Pipe	Without Extension Pipe	Max Diameter (In.)	With Component Parts (Lb)	Without Component Parts (Lb)	Line Number
Cy	8	R	DF				N		1	2	Sp			AR				Pes	84		25	1225		1
Cy	16		DF		R		N			4	Sp	R		AR				Pes	84		‡‡	2500		2
Cy	8		DF	1	1	M	N	100/130	1	2	Sp	Dry	11.0	GE		Ben	N	Pes		146	40½		2200	3
Cy	14	SS	DF	1	(a)	M-H	N	100/130	1	2	Sp	24.0	2.0	GE	JH			Pes	103		50½	1795		4
				2			N	AK					1.7	Own	Own				144		36¾	2500		5
Cy	9	Ste	DF	2	14	M	N	73	?	2	Sp	18.5	1.5	.....		Ben		Ben	103¼		49½	1723		6
		SS	DF	1	1		N	AN-F-48		2	Sp	Dry	.....	Own		Hol		Hol	120		24	1200		7
																								8
Cy							N													73.3	28		550	9
Cy	6						N	AK					2.0							59.3	31		780	10
Cy	12						N	AK					4.0							79.8	**		2000	11
Cy	11		RF				N	AK												96.8	54½	3150		12
	8		DF				N													82.6	54	2205		13
Cy	8		DF				N													113.4	38½	2900		14
	16			1			N							Rot	Rot		Ple			100½	49.9	1553		15
	16			2			N							Rot	Rot		Ple			100½	49.9	1619		16
	16			1†			N							Rot	Rot		Ple			100½	49.9	1600		17
	10			2			N							Rot			Ple			115½	53	2148		18
Cy	5						N	AK		2			1.0							102	28		1095	19
Cy	10						N	AK		4			2.0											20
Cy	9						N						1.0							98.8	49½	1755		21
Cy	9						N						1.0							83.1	43	1280		22

FT—Fir tree.
GE—General Electric Co.
Hol—Holley Carburetor Co.
In—Integral.
JH—Jack & Heintz.
M—Mechanical.
M-H—Mechanical and hydraulic.
N—No or none.
P—Planetary.
Pes—Pesco.
Ple—Plessey.
R—Restricted data.
RF—Reverse flow.
Rot—Rotax.
S—Single.
Sp—Spark.
SS—Stainless steel.
Ste—Steel.
TJ—Turbo-jet.
TP—Turbo-prop.

For Directory of the Manufacturers listed above, see page 63.

AMERICAN AIRCRAFT ENGINES
RECIPROCATING TYPE

ENGINE MAKE AND MODEL		A. T. C. Number	GENERAL DATA											RATINGS									Propeller Drive Ratio (to —1)	Weight (Lb.)		Carburetor		Ignition System—Make	Starting		Installation Dimensions (Overall—Ins.)			Height above Engine Bed	Diameter Mounting Ring or Distance Between Bearers
Make	Model		Arrangement	Cooling Medium	Number of Cylinders – Bore and Stroke (In.)	Total Piston Displacement (Cu. In.)	Compression Ratio (to —1)	B.M.E.P. at Maximum Hp. (Lb. per Sq. In.)	Blower Ratio	Cylinder Material	No. of Valves per Cylinder: Intake	No. of Valves per Cylinder: Exhaust	Valve Arrangement	Maximum (Except Take-off): Horsepower	Maximum (Except Take-off): R. P. M.	Maximum (Except Take-off): At Sea Level or Altitude (Ft.)	Take-off: Horsepower	Take-off: R. P. M.	Cruising: Horsepower	Cruising: R. P. M.	Octane Rating of Fuel Required		Engine Dry—Without Hub or Starter	Per Maximum Hp. (Except Take-off)	Number Used and Make	Type		Make	Method	Length	Height or O. D.	Width		
Cameron	C4-1-E-1	.....	IL	Air	4-4¾x4¼	301.0	7.00	132	.....	(2)	1	1	He	125	2500	SL	130	2650	110	2200	80	D	175	1.40	1-SM	FL	.....	.....	EM	45	25¼	14¼	6⅞	13¼
	C6	.....	IL	Air	6-4¾x4¼	452.0	7.00	132	.....	(1)	1	1	He	168	2500	SL	185	2650	170	2200	80	D	235	1.25	1-SM	.....	ES	.....	EM	57	25¼	14¼	6⅞	13¼
Continental	A65-8F	206	Hor	Air	4-3⅞x3⅝	171.0	6.30	131	No	(5)	1	1	In	65	2300	SL	65	2300	53	2150	73	D	170	2.62	1-Str	FL	Eis	DR	EM	30 11/16	20 1/16	31½	.....	♦
	A65-12F	206	Hor	Air	4-3⅞x3⅝	171.0	6.30	131	No	(5)	1	1	In	65	2300	SL	65	2300	53	2150	73	D	175.6	2.70	1-Str	FL	Scin	DR	EM	30 11/16	20 1/16	31½	.....	♦
	C75-12F	233	Hor	Air	4-4 1/16x3⅝	188.0	6.30	139	No	(5)	1	1	In	75	2275	SL	75	2275	58	2275	73	D	182	2.43	1-Str	FL	Scin	DR	EM	32	21 1/16	31½	.....	♦
	C85-12F	233	Hor	Air	4-4 1/16x3⅝	188.0	6.30	139	No	(5)	1	1	In	85	2575	SL	85	2575	63	2400	73	D	182	2.14	1-Str	FL	Scin	.....	.....	32	21 1/16	31½	.....	♦
	C85-8FJ	233	Hor	Air	4-4 1/16x3⅝	188.0	6.30	139	No	(5)	1	1	In	85	2575	SL	87	2650	63	2400	73	D	182	2.14	.....	**	Scin	DR	EM	[illegible]	21 1/16	31½	.....	♦
	C90-12F, 12FJ	252	Hor	Air	4-4 1/16x3⅞	200.9	7.00	143	No	(5)	1	1	In	90	2475	SL	95	2625	68	2350	80	D	188	2.09	1-Str	FL	Scin	DR	EM	31.26	28 11/16	31½	.....	♦
	C115-2	238	Hor	Air	6-4 1/16x3⅝	282.0	6.30	138	No	(5)	1	1	In	115	2350	SL	115	2350	90	2200	73	D	257	2.23	1-MS	FL	Scin	DR	EM	39¾	23½	31½	.....	.....
	C125-2	238	Hor	Air	6-4 1/16x3⅝	282.0	6.30	138	No	(5)	1	1	In	125	2550	SL	125	2550	98	2400	73	D	257	2.05	1-MS	FL	Scin	DR	EM	39¾	23½	31½	.....	.....
	C145-2	238	Hor	Air	6-4 1/16x3⅞	301.3	7.00	141	No	(5)	1	1	In	145	2700	SL	145	2700	106	2450	80	D	258	1.77	1-MS	FL	Scin	DR	EM	36¾	27 11/16	31½	.....	.....
	▲▼E165-2	246	Hor	Air	6-5x4	471.0	7.00	135	No	(5)	1	1	In	165	2050	SL	165	2050	115	1825	80	D	351	2.12	1-MS	FL	E-Sc	DR	EM	41.34	25.63	33.39	.....	.....
	▲▼E165-3	246	Hor	Air	6-5x4	471.0	7.00	135	No	(5)	1	1	In	165	2050	SL	165	2050	115	1825	80	D	352	2.13	1-Str	PI	E-Sc	DR	EM	46.70	25.63	33.39	.....	.....
	▲▼E165-4	246	Hor	Air	6-5x4	471.0	7.00	135	No	(5)	1	1	In	165	2050	SL	165	2050	115	1825	80	D	344	2.08	1-Str	PI	E-Sc	DR	EM	46.70	22.28	33.39	.....	.....
	▲▼E185-1	246	Hor	Air	6-5x4	471.0	7.00	135	No	(5)	1	1	In	185	2300	SL	185	2300	130	2050	80	D	344	1.86	1-Str	PI	E-Sc	DR	EM	46.70	22.28	33.39	.....	.....
	▲▼E185-2	246	Hor	Air	6-5x4	471.0	7.00	135	No	(5)	1	1	In	185	2300	SL	185	2300	130	2050	80	D	351	1.90	1-MS	FL	E-Sc	DR	EM	41.34	25.63	33.39	.....	.....
	▲▼E185-3	246	Hor	Air	6-5x4	471.0	7.00	135	No	(5)	1	1	In	185	2300	SL	185	2300	130	2050	80	D	352	1.90	1-Str	PI	E-Sc	DR	EM	46.70	25.63	33.39	.....	.....
	▲▼E185-8	246	Hor	Air	6-5x4	471.0	7.00	135	No	(5)	1	1	In	185	2300	SL	185	2300	130	2050	80	D	343	1.86	1-Str	PI	E-Sc	DR	EM	41.34	22.28	33.39	.....	.....
	GE240-1	.....	Hor	Air	6-5x4	471.0	7.00	138	No	(9)	1	1	In	240	2900	SL	.....	.....	180	2600	80	.60	385	1.60	1-Str	PI	Scin	Ecl	EM	52.03	23.66	34.89	.....	.....
	W670-23	162	Rad	Air	7-5⅛x4⅝	667.8	6.10	130	No	(5)	1	1	In	240	2200	SL	240	2200	175	2000	80	D	519	2.16	1-Str	FL	Scin	.....	.....	34 1/16	42½	42½	.....	.....
Franklin	4A4-75-A3	239	Hor	Air	4-4½x3½	225.0	6.50	129	No	(6)	1	1	In	75	2050	SL	.....	.....	51	1870	73	D	214	2.85	1-MS	FL	Eis	AL	EM	30 11/16	20 11/16	30 11/16	12 11/16	.....
	4A4-85-A3	239	Hor	Air	4-4½x3½	225.0	6.50	127	No	(6)	1	1	In	85	2350	SL	.....	.....	64	2140	73	D	214	2.51	1-MS	FL	Eis	AL	EM	30 11/16	20 11/16	30 11/16	12 11/16	.....
	4A4-95-A3	239	Hor	Air	4-4½x3½	225.0	6.50	129	No	(6)	1	1	In	95	2600	SL	.....	.....	71	2360	73	D	214	2.25	1-MS	FL	Eis	AL	EM	30 11/16	20 11/16	30 11/16	12 11/16	.....
	4A4-75-B3	239	Hor	Air	4-4½x3½	225.0	7.00	135	No	(6)	1	1	In	75	1950	SL	.....	.....	51	1775	80	D	214	2.85	1-MS	FL	Eis	AL	EM	30 11/16	20 11/16	30 11/16	12 11/16	.....
	4A4-85-B3	239	Hor	Air	4-4½x3½	225.0	7.00	136	No	(6)	1	1	In	85	2200	SL	.....	.....	64	2000	80	D	214	2.51	1-MS	FL	Eis	AL	EM	30 11/16	20 11/16	30 11/16	12 11/16	.....
	4A4-100-B3	239	Hor	Air	4-4½x3½	225.0	7.00	136	No	(6)	1	1	In	100	2600	SL	.....	.....	76	2370	80	D	214	2.14	1-MS	FL	Eis	AL	EM	30 11/16	20 11/16	30 11/16	12 11/16	.....
	6A4-125-A3	238	Hor	Air	6-4½x3½	335.0	6.50	134	No	(6)	1	1	In	125	2200	SL	.....	.....	94	2000	73	D	291	2.32	1-MS	FL	Eis	DR	EM	37⅝	22 11/16	30 11/16	13 1/16	.....
	6A4-135-A3	238	Hor	Air	6-4½x3½	335.0	6.50	130	No	(6)	1	1	In	135	2450	SL	.....	.....	101	2230	73	D	291	2.15	1-MS	FL	Eis	DR	EM	37⅝	22 11/16	30 11/16	13 1/16	.....
	6A4-145-A3	238	Hor	Air	6-4½x3½	335.0	6.50	132	No	(6)	1	1	In	145	2600	SL	.....	.....	100	2370	73	D	291	2.00	1-MS	FL	Eis	DR	EM	37⅝	22 11/16	30 11/16	13 1/16	.....
	6A4-130-B3	238	Hor	Air	6-4½x3½	335.0	7.00	130	No	(6)	1	1	In	130	2200	SL	.....	.....	98	2000	80	D	291	2.23	1-MS	FL	Eis	DR	EM	37⅝	22 11/16	30 11/16	13 1/16	.....
	6A4-140-B3	238	Hor	Air	6-4½x3½	335.0	7.00	140	No	(6)	1	1	In	140	2375	SL	.....	.....	105	2160	80	D	291	2.07	1-MS	FL	Eis	DR	EM	37⅝	22 11/16	30 11/16	13 1/16	.....
	6A4-150-B3	238	Hor	Air	6-4½x3½	335.0	7.00	136	No	(6)	1	1	In	150	2600	SL	.....	.....	113	2370	80	D	291	1.94	1-MS	FL	Eis	DR	EM	37⅝	22 11/16	30 11/16	13 1/16	.....
	6V4-178-B3	244	Ver	Air	6-4½x3½	335.0	7.00	140	No	(6)	1	1	In	178	3000	SL	.....	.....	.....	.....	80	D	294	1.65	1-MS	FL	Scin	DR	EM	36	26 11/16	30 11/16	.....	.....
	6V4-165-B3F	244	Ver	Air(a)	6-4½x3½	335.0	7.00	130	No	(6)	1	1	In	165	3000	SL	.....	.....	.....	.....	82	D	339	2.05	1-Str	FL	Scin	DR	EM	40⅝	29 11/16	30 11/16	.....	.....
	6A4-165-B3	238	Hor	Air	6-4½x3½	335.0	7.00	139	No	(6)	1	1	In	165	2800	SL	.....	.....	124	2550	80	D	307	1.86	1-MS	PI	Scin	DR	EM	37⅝	25 1/16	30 11/16	13 1/16	.....
	6V4-200-C32	244	Ver	Air	6-4½x3½	335.0	8.50	152	No	(6)	1	1	In	200	3100	SL	.....	.....	.....	.....	91	D	306	1.53	1-BM	P-FL	Scin	DR	EM	26 11/16	36	30 11/16	.....	.....
	6AG4-185-B13	238	Hor	Air	6-4½x3½	335.0	7.60	141	No	(6)	1	1	In	190	3100	SL	.....	.....	.....	.....	80	.632	324	1.11	1-BM	P-FL	Scin	DR	EM	40 11/16	28½	30 11/16	.....	.....
	6V6-245-B16F	258	Ver	Air(a)	6-4¾x4	425.0	7.50	140	No	(6)	1	1	In	245	3275	SL	.....	.....	.....	.....	80	D	321	1.31	1-Ben	PI	Scin	Opt	EM	39	36 11/16	33 1/16	.....	.....
	6V6-245-B16F	258	Ver	Air	6-4¾x4	425.0	7.50	139	No	(6)	1	1	In	245	3275	SL	245	3275	184	3275	80	D	353	1.44	1-Str	PI	Eis	Opt	EM	33¼	39 11/16	33 1/16	.....	.....
	6AG56-250-C	.....	Hor	Air	6-4¾x4	425.0	7.00	146	9.25	(6)	1	1	In	230	3200	16500	250	3200	175	2900	100	.623	470	2.04	1-Str	PI	Scin	Opt	EM	55 1/16	25 1/16	33	.....	.....
	6AG6-245-B	.....	Hor	Air	6-4¾x4	425.0	7.40	138	No	(6)	1	1	In	240	3200	SL	245	3300	180	2900	80	.623	405	1.69	1-Str	PI	Scin	Opt	EM	47 1/16	35 1/16	33 1/16	.....	.....
	6A8-225-B7	.....	Hor	Air	6-5x4¼	500.0	7.00	137	No	(6)	1	1	In	225	2600	SL	.....	.....	169	2370	80	D	382	1.69	1-MS	FL	Eis	DR	EM	45 11/16	30 1/16	33 11/16	21	.....
	6A8-215-B9F	.....	Hor	Air(a)	6-5x4¼	500.0	7.00	136	No	(6)	1	1	In	215	2500	SL	.....	.....	161	2280	80	D	474	2.21	1-MS	FL	DR	DR	EM	66 1/16	26 1/16	33 11/16	21 1/16	.....
Jacobs	O-240A	.....	Hor	Air	4-4⅜x4	241.0	6.50	143	No	(5)	1	1	In	100	2300	SL	100	2300	75	2090	80	D	200	2.00	Opt	F-FI	Scin	DR	EM	39.63	18.13	33.60	.....	16
	O-360A	.....	Hor	Air	6-4⅜x4	361.0	6.50	151	No	(5)	1	1	In	165	2400	SL	165	2400	120	2160	80	D	300	1.82	Opt	F-FI	Scin	DR	EM	47.44	18.13	33.60	.....	16
	R-755A	237	Rad	Air	7-5¼x5	757.0	6.00	143	No	(5)	1	1	In	300	2200	SL	300	2200	300	2000	80	D	505	1.68	1-Str	FL	Scin	Ecl	EM	39.50	44.00	.....	.....	16½
	R-755E	237	Rad	Air	7-5¼x5	757.0	6.50	146	No	(5)	1	1	In	350	2500	SL	350	2500	350	2250	91	.649	600	1.72	1-Str	FL	Scin	Ecl	EM	42.34	44	.....	.....	16½
	R-915A	.....	Rad	Air	7-5½x5½	914.0	6.00	124	No	(5)	1	1	In	375	2300	SL	375	2300	375	2070	80	D	560	1.49	1-Str	FL	Scin	Ecl	EM	40.40	45.60	.....	.....	16½
Kinner	R-56	183	Rad	Air	5-5x5½	540.0	5.50	127	No	(5)	1	1	In	160	1850	SL	160	1850	115	1650	73	D	382	2.28	1-SH	FL	Scin	Ecl	Opt	33.6	46 11/16	.....	.....	14

Lycoming	O-145-B2	210	Hor♦	Air♦	4-3⅝x3½♦	144.5	6.50	♦140	No	(1)	1	1	In	65	2550	SL	65	2550	49	2310	73	D	183	2.80	1-MS	FL	Scin	...	PS	24.62	20.88	29.88	...	(s)
	O-235-C1	223	Hor	Air	4-4⅜x3⅞	233.3	6.75	141	No	(5)	1	1	In	108	2600	SL	115	2800	81	2380	80	D	207	1.92	1-MS	FL	Scin	DR	EM	29.56	22.53	32.00	...	...
	O-290D	...	Hor	Air	4-4⅞x3⅞	289	6.50	132	...	(5)	1	1	In	125	2600	SL	130	2800	94	2350	80	D	225	1.80	1-MS	FL	Scin	DR	EM	29.56	22.81	32.32	...	(t)
	GO-290-A	...	Hor	Air	4-4⅞x3⅞	289.0	7.50	137	No	(5)	1	1	In	160	3000	SL	170	3400	120	2720	91/96	.64	323	2.02	1-MS	FL	Scin	DR	EM	34.88	28.80	33.12	...	(t)
	O-435-A	228	Hor	Air	6-4⅞x3⅞	434.0	6.50	136	No	(5)	1	1	In	190	2550	SL	190	2550	143	2310	73	D	364	1.91	1-MS	FL	Scin	DR	EM	38.10	29.61	32.24	...	(u)
	O-435-A2	228	Hor	Air	6-4⅞x3⅞	434	7.50	137	...	(5)	1	1	In	225	3000	SL	225	3000	170	2750	91/96	D	363	1.61	1-MS	FL	Scin	DR	EM	38.10	29.59	32.24	...	(u)
	GO-435-A2	228	Hor	Air	6-4⅞x3⅞	434	7.50	146	...	(5)	1	1	In	240	3000	SL	260	3400	180	2750	91/96	.64	432	1.80	1-MS	FL	Scin	DR	EM	47.71	29.59	33.12	...	(u)
	GO-435-C2	228	Hor	Air	6-4⅞x3⅞	434	7.50	146	...	(5)	1	1	In	240	3000	SL	260	3400	180	2750	91/96	.64	432	1.80	1-Str	PI	Scin	Opt	...	39.57	29.59	33.12	...	(u)
	GSO-580	256	Hor	Air	8-4⅞x3⅞	578.0	7.50	146	7.91	(5)	1	1	In	320	3000	SL	375	3000	240	3730	91/96	.64	635	1.98	1-Str	...	Scin	Opt	EM	57.96	19.97	33.16	...	...
	GSO-580-B	256	Hor	Air	8-4⅞x3⅞	578	7.30	160	7.91	(5)	1	1	In	350	3000	SL	400	3300	260	2750	100/30	.64	624	1.78	1-Str	PI	Scin	Opt	...	57.93	19.97	33.16	...	...
	R-680-E3A	202	Rad	Air	9-4⅝x4½	680.4	7.00	151	1.00	(5)	1	1	In	285	2200	SL	300	2300	222	2000	91/96	.64	515	1.80	1-Str	FL	Scin	Ecl	EM	37.50	43.50	...	...	19.25
Pratt & Whitney Aircraft																																		
	Wasp Jr-B4	123	Rad	Air	9-5 3/16x5 3/16	985.0	6.00	157	10.00	(5)	1	1	In	450	2300	2300	450	2300	300	2000	80/87	D	684	1.52	1-Str	FL	Scin	Opt	EM	47.69	46.10	...	...	23.37
	Wasp Jr-B5	123	Rad	Air	9-5 3/16x5 3/16	985.0	6.00	157	10.00	(5)	1	1	In	450	2300	2300	450	2300	300	2000	80/87	D	682	1.51	1-Str	FL	Scin	Opt	EM	42.43	46.10	...	...	23.37
	Wasp-S1H1	129	Rad	Air	9-5¾x5¾	1344.0	6.00	157	12.00	(5)	1	1	In	550	2200	8000	600	2250	400	2000	80/87	D	865	1.57	1-Str	FL	Scin	Opt	EM	43.01	51.80	...	...	23.37
	Wasp-S1H1-G	129	Rad	Air	9-5¾x5¾	1344.0	6.00	157	12.00	(5)	1	1	In	550	2200	8000	600	2250	400	2000	80/87	.667	953	1.73	1-Str	FL	Scin	Opt	EM	47.81	51.80	...	...	23.37
	Wasp-S3H1	143	Rad	Air	9-5¾x5¾	1344.0	6.00	157	10.00	(5)	1	1	In	550	2200	5000	600	2250	400	2000	80/87	D	865	1.57	1-Str	FL	Scin	Opt	EM	43.01	51.80	...	...	23.37
	Wasp-S3H1-G	142	Rad	Air	9-5¾x5¾	1344.0	6.00	157	10.00	(5)	1	1	In	550	2200	5000	600	2250	400	2000	80/87	.667	953	1.73	1-Str	FL	Scin	Opt	EM	47.81	51.80	...	...	23.37
	Wasp-S3H2	...	Rad	Air	9-5¾x5¾	1344.0	6.00	157	10.00	(5)	1	1	In	550	2200	5000	600	2250	400	2000	80/87	D	865	1.57	1-Str	FL	Scin	Opt	EM	47.70	51.80	...	...	23.37
	Twin Wasp-S1C3-G	186	Rad	Air	14-5½x5½	1830.0	6.70	192	7.15	(5)	1	1	In	1050	2550	7500	1200	2700	700	2250	91/96	.562	1467	1.40	1-Str	PI	Scin	Opt	EM	61.16	48.19	...	...	27.00
	Twin Wasp-D5	230	Rad	Air	14-5¾x5½	2004.0	6.50	212	7.15	(5)	1	1	In	1200	2550	6400	1450	2700	...	...	100/130	.500	1575	1.31	1-Str	PI	Scin	Opt	EM	61.02	49.10	...	...	27.00
	Twin Wasp D7	230	Rad	Air	14-5¾x5½	2004.0	6.50	212	7.15	(5)	1	1	In	1200	2550	6400	1450	2700	...	...	100/130	.5625	1595	1.33	1-Str	PI	Scin	Opt	EM	61.02	49.10	...	...	27.00
	Twin Wasp-2SD13-G	230	Rad	Air	14-5¾x5½	2004.0	6.50	212	7.15	(5)	1	1	In	1200	2550	5000	1450	2700	...	...	100/130	.500	1585	1.33	1-Str	PI	Scin	Opt	EM	61.02	49.10	...	...	27.00
		...	(2-Speed Blower Engine)				...	...	8.40	...	...	...	...	1100	2550	14000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Twin Wasp D14	230	Rad	Air	14-5¾x5½	2004.0	6.50	212	7.15	(5)	1	1	In	1200	2550	5000	1450	2700	...	...	100/130	.5625	1615	1.35	1-Str	PI	Scin	Opt	EM	61.02	49.10	...	...	27.00
		...	(2-Speed Blower Engine)				...	...	9.52	...	...	...	...	1100	2550	14000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	*Twin Wasp-E1	257	Rad	Air	14-5¾x6	2180.0	6.70	214	7.00	(5)	1	1	In	1300	2600	8000	†1650	2600	...	...	100/130	.437	1870	1.44	1-Str	PI	Scin	Opt	EM	75.80	54.00	...	...	33.20
	*Double Wasp-CA3	231	Rad	Air	18-5¾x6	2804.0	6.75	212	7.29	(5)	1	1	In	1800	2600	6000	†2100	2800	...	...	100/130	.450	2317	1.29	1-Str	PI	Scin	Opt	EM	76.40	52.80	...	...	33.75
	*Double Wasp-CA5	231	Rad	Air	18-5¾x6	2804.0	6.75	232	7.29	(5)	1	1	In	1800	2600	8500	†2300	2800	...	...	115/145	.450	2317	1.29	1-Str	PI	Scin	Opt	EM	76.40	52.80	...	...	33.75
	*Double Wasp-CA15	231	Rad	Air	18-5¾x6	2804.0	6.75	242	7.29	(5)	1	1	In	1800	2600	6000	†2100	2800	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
		...	(2-Speed Blower Engine)				...	212	9.45	...	...	...	...	1600	2600	16000	...	...	...	...	100/130	.450	2350	1.47	1-Str	PI	Scin	Opt	EM	76.40	52.80	...	...	33.75
	*Double Wasp-CA17	231	Rad	Air	18-5¾x6	2804.0	6.75	242	7.29	(5)	1	1	In	1800	2600	6500	†2300	2800	...	...	115/145	.450	2350	1.30	1-Str	PI	Scin	Opt	EM	76.40	52.80	...	...	33.75
		...	(2-Speed Blower Engine)				...	232	9.45	...	...	...	...	1600	2600	16000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	*Double Wasp-CA18	231	Rad	Air	18-5¾x6	2804.0	6.75	242	7.29	(5)	1	1	In	1800	2600	6000	†2100	2800	...	...	100/130	.450	2350	1.30	1-Str	PI	Scin	Opt	EM	76.40	52.80	...	...	33.75
		...	(2-Speed Blower Engine)				...	212	9.10	...	...	...	...	1600	2600	14500	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	*Double Wasp-CA19	231	Rad	Air	18-5¾x6	2804.0	6.75	242	7.29	(5)	1	1	In	1800	2600	6500	†2300	2800	...	...	115/145	.450	2350	1.30	1-Str	PI	Scin	Opt	EM	76.40	52.80	...	...	33.75
		...	(2-Speed Blower Engine)				...	232	9.10	...	...	...	...	1600	2600	14500	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	*Double Wasp-CB1	...	Rad	Air	18-5¾x6	2804.0	6.75	232	7.29	(5)	1	1	In	1900	2600	7000	†2300	2800	...	...	115/145	.450	2357	1.24	1-Str	PI	Scin	Opt	EM	81.40	52.80	...	...	33.75
	*Double Wasp-CB16	...	Rad	Air	18-5¾x6	2804.0	6.75	242	7.29	(5)	1	1	In	1800	2600	8500	†2050	2700	...	...	100/130	.450	2390	1.33	1-Str	PI	Scin	Opt	EM	81.40	52.80	...	...	33.75
		...	(2-Speed Blower Engine)				...	206	8.40	...	...	...	...	1600	2600	16000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	*Double Wasp-CB13	...	Rad	Air	18-5¾x6	2804.0	6.75	252	7.29	(5)	1	1	In	1900	2600	7000	†2300	2800	...	...	115/145	.450	2390	1.26	1-Str	PI	Scin	Opt	EM	81.40	52.80	...	...	33.75
		...	(2-Speed Blower Engine)				...	232	9.10	...	...	...	...	1700	2600	18000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	*Wasp Major-TSB3-G	247	Rad	Air	28-5¾x6	4363.0	6.70	218	6.37	(5)	1	1	In	2650	2550	5500	†3250	2700	...	...	108/135	.375	3482	1.31	1-Str	PI	Scin	Opt	EM	96.75	54.00	...	...	36.50
	*Wasp Major-B13	247	Rad	Air	28-5¾x6	4363.0	6.70	236	6.91	(5)	1	1	In	2650	2550	6000	†3250	2700	...	...	115/145	.425	3515	1.33	1-Str	PI	Scin	Opt	EM	101.75	54.00	...	...	36.50
		...	(2-Speed Blower Engine)				...	218	8.90	...	...	...	...	2300	2550	16300	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ranger	6-440C-2	216	IV-L	Air	6-4⅛x5½	441.0	6.00	128	No	(5)	1	1	OH	175	2450	SL	175	2450	131	2220	65	D	382	2.18	1-Str	FL	Scin	Opt	Opt	53.16	33.50	21.87	...	26.87
	6-440C-5	216	IV-L	Air	6-4⅛x5½	441.0	7.50	146	No	(5)	1	1	OH	200	2450	SL	200	2450	150	2230	87	D	382	1.91	1-Str	FL	Scin	Opt	Opt	53.16	33.50	21.87	...	26.87
Warner	Super Scarab 165	214	Rad	Air	7-4⅝x4¼	500.0	6.40	125	No	(5)	1	1	In	165	2100	SL	175	2250	124	1910	73	D	341	2.06	1-SH	FL	Scin	Ecl	HE	13.54	37.25	...	...	17.50
	Super Scarab 185	235	Rad	Air	7-4⅞x4¼	550.0	6.20	123	No	(5)	1	1	In	185	2175	SL	200	2475	139	1970	73	D	344	1.86	1-Hol	FL	Scin	Ecl	EM	13.54	37.25	...	...	17.50
Wright	Cyclone 736C9HD	...	Rad	Air	9-6⅛x6⅞	1823.0	6.80	222	7.21	(5)	1	1	In	1275	2600	3500	1425	2700	892	2300	100/130	.5625	1376	1.08	1-Str	PI	ES	Opt	EM	47.09	54.95	...	...	30.25
		...	(2-Speed Blower Engine)				...	...	8.69	...	...	...	...	1125	2500	10600	1250	2700	785	2300	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Cyclone 740CD9HD	...	Rad	Air	9-6⅛x6⅞	1823.0	6.80	222	7.21	(5)	1	1	In	1275	2500	3000	1425	2700	890	2200	100/130	.5625	1368	1.07	1-Str	PI	ES	Opt	EM	47.09	56.77	...	...	30.25
	Cyclone C18BA	...	Rad	Air	18-6⅛x6 5/16	3347.0	6.85	197	6.61	(5)	1	1	In	2000	2400	4800	2200	2800	1400	2300	100/130	.4375	2790	1.39	1-Ben	PI	Scin	Opt	EM	76.26	53.75	...	...	38.00
		...	(2-Speed Blower Engine)				...	177	8.81	...	...	...	...	1800	2400	15000	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Cyclone 749C18BD	...	Rad	Air	18-6⅛x6 5/16	3347.0	6.50	207	6.46	(5)	1	1	In	2100	2400	5500	2800	2800	1470	2300	100/130	.4375	2884	1.37	1-Ben	PI	Scin	Opt	EM	76.47	55.62	...	...	40.75
		...	(2-Speed Blower Engine)				...	...	8.67	...	...	...	...	1800	2400	10000	1900	2600	1400	2300	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Cyclone 957C7BA1	...	Rad	Air	7-6⅛x6 5/16	1300.0	6.20	178	7.21	(5)	1	1	In	700	2400	5000	800	2600	490	2200	91/96	.5625	1015	1.04	1-Str	PI	Bos	Opt	EM	49.12	...	50.45	...	29.00
	Cyclone 961C9HE1	...	Rad	Air	9-6⅛x6⅞	1823.0	6.80	222	7.21	(5)	1	1	In	1275	2500	3500	1475	2800	890	2300	100/130	.4375	1380	1.09	1-Str	PI	Bos	Opt	EM	46.50	...	54.95	...	30.25
		...	(2-Speed Blower Engine)				...	...	8.69	...	...	...	...	1125	2500	10600	1250	2700	785	2300	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Cyclone 956C9HE1	...	Rad	Air	9-6⅛x6⅞	1823.0	6.80	222	7.21	(5)	1	1	In	1275	2500	3500	1525	2800	890	2300	122/145	.4375	1390	1.09	1-Str	PI	Bos	Opt	EM	46.50	...	54.95	...	30.25
		...	(2-Speed Blower Engine)				...	...	8.69	...	...	...	...	1125	2500	10600	1250	2700	785	2300	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Cyclone 985C9HE1	...	Rad	Air	9-6⅛x6⅞	1823.0	6.80	222	7.21	(5)	1	1	In	1275	2500	3500	1525	2800	890	2300	100/130	.4375	1413	1.10	1-Str	PI	Bos	Opt	EM	46.50	...	54.95	...	30.25
		...	(2-Speed Blower Engine)				...	...	8.69	...	...	...	...	1125	2500	10600	1250	2700	785	2300	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Cyclone 838C18CA1	...	Rad	Air	18-6⅛x6 5/16	3347.0	6.50	210	6.46	(5)	1	1	In	2300	2800	...	2700	2900	1600	2300	115/145	.4371	2848	1.23	1-Str	IM	Bos	Opt	EM	81.93	...	56.62	...	...
		...	(2-Speed Blower Engine)				...	...	8.67	...	...	...	...	1900	2600	...	2100	2600	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Turbo-Cyclone R3350-30W	...	Rad	Air	18-6⅛x6 5/16	3347.0	6.70	212	6.46	(5)	1	1	In	2800	2800	...	3250	2900	1800	2200	115/145	.4375	3230	1.24	1-Str	PI	Scin	Opt	EM	91.80	...	56.25	...	...

ABBREVIATIONS—

*—Equipped for water injection.
♦—Vertical 11 3/16", Horizontal (Upper) 7"—Horizontal (Lower) 10½".
^—Equipped with SAE #20 splined propeller shaft.
^—Equipped with #4 flanged propeller shaft, available only on special request.
†—Power rating without water injection.
*—One engine-driven fuel pump standard equipment with each engine.
**—Excello fuel injector.
(a)—Cooled by fan.
(s)—A longitudinal type mounting is provided by 4 mounting bosses integral with crankcase.
(t)—A rear type mounting is provided by 4 mounting bosses integral with crankcase.
(u)—A rear type mounting is provided by 5 mounting bosses, 4 of which are integral with the crankcase sections and the remaining boss is located at rear of the oil sump.
(1)—Nickel iron with aluminum head.
(2)—Aluminum with steel liner.
(5)—Steel with aluminum head.
(6)—Aluminum with cast iron sleeves.
(9)—Steel barrel with aluminum fins cut in aluminum muff and bonded.
AL—Electric Auto-Lite Co.
Ben—Bendix Aviation Corp.
BM—Bendix or Marvel Schebler.
Bos—American Bosch Corp.
D—Direct. DR—Delco-Remy Div.
Ecl—Eclipse-Pioneer Div.
EM—Electric motor.
Eis—Eisemann Corp.
ES—Edison, Inc. (Splitdorf).
E-Sc—Eisemann or Scintilla.
F-FI—Float or fuel injector.
FL—Float.
HE—Hand crank or electric motor.
HO—Horizontally opposed in side of each cylinder.
Hol—Holley Carburetor Co.
Hor—Horizontally opposed.
IL—In-Line.
IM—Impeller injection.
In—In head with push rods and rocker arms.
IV-L—Inverted, in line.
MS—Marvel-Schebler Carburetor Div.
OH—Overhead camshaft.
Opt—Optional.
P-FL—Pressure or float injection.
PI—Pressure injection. Rad—Radial.
PS—Propeller swing.
Scin—Scintilla Magneto Div.
SH—Stromberg or Holley.
SL—Sea-Level.
SM—Stromberg or Marvel Schebler.
Str—Stromberg-Elmira Div.
Ver—Vertically opposed.

For Directory of the Manufacturers listed above, see page 63.

SMALL GASOLINE ENGINES

AIR COOLED

MAKE AND MODEL		Designed for Use	Number of Cycles	Engine: Type	Engine: No. of Cylinders	Engine: Bore and Stroke (In.)	Engine: Total Displacement (Cu. In.)	Engine: Compression Ratio (to —1)	Engine: Valve Location	Engine: Horsepower: Rated at RPM	Engine: Horsepower: Continuous at RPM	Engine: Torque—Lb. Ft. at RPM	Engine: Weight (Lb.)	Governor: Used	Governor: Type	Ignition System Type	Fuel System: Type	Fuel System: Make	Fuel Used	Starting Method
Briggs & Stratton	5S	General Purpose	4	Ver	1	2x1½	4.71	5.29	L	1.1-3200	.94-3200	1.8-3200	30	Y	Av	Mag	Mv	Own	G	Rr
	6S	General Purpose	4	Ver	1	2x2	6.28	5.86	L	1.6-3200	1.4-3200	2.6-3200	33	Y	Av	Mag	MV	Own	G	Rr
	6HSF	Pu,Lm	4	Hor	1	2x2	6.28	5.86	L	1.6-3200	1.4-3200	2.6-3200	38	Y	Av	Mag	MV	Own	G	HR
	N	General Purpose	4	Ver	1	2x2	6.28	5.86	L	2.0-3600	1.7-3600	2.9-3800	33	Y	Pn	Mag	Car	Own	G	Rr
	6HF	Pu,Lm	4	Hor	1	2x2	6.28	5.86	L	2.0-3600	1.7-3600	2.9-3800	39	Y	Av	Mag	Car	Own	G	HR
	8	General Purpose	4	Ver	1	2¼x2	7.95	5.40	L	2.5-3600	2.1-3600	3.7-3600	36	Y	Av	Mag	Car	Own	G	Rr
	8HF	Pu,Lm	4	Hor	1	2¼x2	7.95	5.40	L	2.5-3600	2.1-3600	3.7-3600	42	Y	Av	Mag	Car	Own	G	HR
	9	General Purpose	4	Ver	1	2¼x2¼	8.95	5.40	L	3.1-3200	2.6-3200	5.1-3200	61	Y	Me	Mag	Car	Own	G	HR
	14	General Purpose	4	Ver	1	2⅝x2⅝	14.21	5.40	L	5.1-3200	4.3-3200	8.4-3200	76	Y	Me	Mag	Car	Own	G	HR
	23	General Purpose	4	Ver	1	3x3¼	22.97	5.40	L	8.2-3200	7-3200	13.5-3200	98	Y	Me	Mag	Car	Own	G	HR
Continental	AA7	General Purpose	4	(a)	1	2⅛x2	7.10	5.70	L	1.6-2800	1.5-2600	3.03-2800	41	Y	Av	Mag	Car	Zen	G	PB
	AA7B	General Purpose	4	(a)	1	2⅛x2	7.10	6.00	L	2.18-3800	2.0-3400	3.0-3400	41	Y	Av	Mag	Car	Zen	G	PB
	AU7	General Purpose	4	(a)	1	2⅛x2	7.10	5.70	L	1.6-2800	1.5-2600	3.03-2600	41	Y	Av	Mag	Car	Zen	G	PB
	AU7B	General Purpose	4	(a)	1	2⅛x2	7.10	6.00	L	2.18-3800	2.0-3400	3.0-3400	41	Y	Av	Mag	Car	Zen	G	PB
Cushman	Husky-M6	GS,Co,Ha,Pu,Re,Af	4	Ver	1	2⅝x2¼	12.30	4.70	L	3.0-3000	2.6-300	5.2-2000	65	Y	Fb	Mag	Car	Til	G	Rr
	Husky-M7	GS,Co,Ha,Pu,Re,Af	4	Ver	1	2⅝x2¾	14.90	5.40	L	4.5-3000	3.8-3000	7.9-2000	65	Y	Fb	Mag	Car	Til	G	Rr
	Husky-M8	GS,Ca,Ha,Pu,Re,Af	4	Ver	1	2⅞x2¾	17.80	5.90	L	5.0-3000	4.3-3000	9.5-2000	65	Y	Fb	Mag	Car	Til	G	Rr
Erie	2CH-1000	General Purpose	2	Hor	1	1⅝x1⅝	3.36	5.21	...	.8-3000	.75-2400	1.4-3000	18	Y	Fb	Mag	Car	Own	(c)	Rr
	2CV-1000	General Purpose	2	Ver	1	1⅝x1⅝	3.36	5.21	...	.8-3000	.75-2400	1.4-3000	18	Y	Fb	Mag	Car	Own	(c)	Rr
Gladden	40	General Purpose	4	Ver	1	2½x3	14.70	4.50	L	4.3-3200	4.3-3200	8.4-2200	73	Y	Fb	Mag	Car	MS	G,K	Rr
	40M	Marine	4	Ver	1	2½x3	14.70	4.50	L	4.3-3200	4.3-3200	8.4-2200	73	Y	Fb	Mag	Car	MS	G	Rr
	AB	GS,Co,Ha,Pu,Re,Af	4	Hor	1	2¾x3	17.80	5.40	L	5.0-2600	5.0-2600	9.5-2500	68	Y	Av	Mag	Car	MS	G,K	Rr
	50	General Purpose	4	Ver	1	2½x3	14.70	5.70	L	5.25-3200	5.25-3200	9.2-2500	78	Y	Fb	Mag	Car	MS	G	Rr
	75	GS,Co,Ha,Pu,Re,Af	4	Ver	1	2⅞x3	19.40	5.70	L	7.0-3200	7.0-3200	13.5-2200	78	Y	Fb	Mag	Car	MS	G,K	Rr
	75ES	General Purpose	4	Ver	1	2⅞x3	19.40	5.70	L	6.5-3200	6.5-3200	11.8-3200	133	N	....	Bat	Car	MS	G	Ele
	75M	Marine	4	Ver	1	2⅞x3	19.40	5.70	L	7.0-3200	7.0-3200	11.8-3200	80	N	....	Mag	Car	MS	G	Rr
	75MES	Marine	4	Ver	1	2⅞x3	19.40	5.70	L	6.5-3200	6.5-3200	11.0-3200	135	N	....	Bat	Car	MS	G	Ele
	MC	Motorcycle	4	Ver	1	2⅞x3	19.40	7.00	L	9.0-4000	7.0-3000	12.3-3000	70	N	....	Mag	Car	Am	G	Pe
Homelite	20	GS,Pu,Cs,Bl	2	Ver	1	2⅜x1½	6.70	5.50	(e)	3.5-3600	3.5-3600	....	20	Y	Va	Mag	Car	Til	G,K	Hc
	23	GS,Pu,Bl	2	Ver	1	2¼x2⅛	8.40	5.50	(e)	4.0-3600	4.0-3600	....	30	Y	Va	Mag	Car	Own	G,K	Hc
	24	GS,Co,Pu,CS,Bl	2	Ver	1	2⅝x2⅛	11.40	5.50	(e)	6.0-3600	6.0-3600	....	40	Y	Va	Mag	Car	OZ	G,K	Hc
	25	GS,Pu,CS,Bl	2	Hor	2	2⅝x2⅛	22.80	5.50	(e)	10.0-3600	10.0-3600	....	55	Y	Va	Mag	Car	Own	G,K	Hc
Jacobs	O-60	GS,Co,Pu,Af	4	Hor	2	3½x3	57.7	5.60	L	15.0-2400	15-2400	35-2100	150	Y	Fb	Mag	Car	Zen	G	HP
Jacobsen	J100	Lm	2	Hor	1	2x1½	4.70	5.50	...	1.25-3000	1.25-3000	2.25-3000	19½	Y	Av	Mag	Car	Til	G	Rr
	J150	Lm	2	Hor	1	2¼x1¾	6.90	5.00	...	1.65-3000	1.65-3000	3.00-3000	35½	Y	Av	Mag	Car	Til	G	Rc
Lauson	LMC	GS,Lm	4	Ver	1	1⅝x1½	3.11	5.90	L	1.05-3800	.75-3800	1.15-3800	22	Y	Fb	Mag	Car	Til	G	Pl
	RSH	GS,Co,Pu,Re	4	Ver	1	2x1⅞	5.90	5.80	L	2.00-3600	1.50-3600	2.10-3600	33	Y	Fb	Mag	Car	Til	G	Pl
	T6H	GS,Co,Pu,Re	4	Ver	1	2¼x2¼	8.94	5.80	L	3.00-3200	2.50-3200	3.95-3200	62	Y	Fb	Mag	Car	Til	G	Pl
	PAC	GS,Co,Pu,Re,Af	4	Ver	1	2⅞x2¾	17.85	5.00	L	4.40-2700	4.00-2700	8.50-2700	85	Y	Fb	Mag	Car	Til	G	Pl
McCulloch	19	GS	2	Hor	1	2x1½	4.72	7.00	...	3.10-4200	2.6-3800	3.78-4000	21	N	....	Mag	Car	Own	G	Rc
	1200D	Lm,Pu	2	Hor	1	2x2	6.28	6.70	...	3.00-3500	2.5-2500	5.10-2500	24	Y	Pn	Mag	Car	Til	G	Bp
	1225B	CS,Pu	2	Hor	1	2¼x2	7.95	6.50	...	5.10-4200	4.4-3200	6.30-3000	25	N	....	Mag	Car	Own	G	Rc
ovo	DA33	GS,Pu,Af,Ha,Co	4	Ver	1	3¼x4	33.10	5.80	L	8.50-2600	6.8-2600	18.6-1600	185	Y	Fb	Mag	Car	CMS	MGS	Hc
	CWR66	GS,Pu,Af,Ha,Co	4	Ver	2	3¼x4	66.40	6.00	L	15.0-2200	12.0-2200	46.0-1200	335	Y	Fb	Mag	Car	ZEM	NgG	HE
	CWR133	GS,Pu,Af,Ha,Co	4	Ver	4	3¼x4	132.80	6.00	L	32.0-1200	25.6-1200	98.0-1200	505	Y	Fb	Mag	Car	ZEM	NgG	HE
	BA23	GS,Pu,Af,Ha,Co	4	Ver	1	2⅞x3½	22.70	6.00	L	7.00-3000	5.6-3000	15.2-1800	150	Y	Fb	Mag	Car	ZEM	G	HR
Onan	AAE	GS	4	Ver	1	2x2	6.28	5.50	L	.80-2100	.60-2100	2.0-2100	†76	Y	‡	Bat	Car	Zen	G	ER
	AH	GS,In	4	Ver	1	2½x2¼	11.05	6.23	L	3.3-3000	2.6-3000	6.0-3000	55	Y	‡	BM	Car	Zen	G	ER
	Com-1B	In	4	Ver	1	2¾x2¾	16.30	4.10	L	3.45-2400	2.7-2400	7.1-2400	124	Y	‡	Mag	Car	Zen	NgG	ER
	1B	GS	4	Ver	1	2¾x2¾	16.30	4.80	...	2.50-1800	2.5-1800	7.3-1800	†177	Y	‡	Mag	Car	Zen	NgG	Rr
	BH	GS,In	4	Op	2	2½x2¼	22.10	6.23	...	6.70-3000	5.3-3000	12.0-3000	85	Y	‡	BM	Car	MS	G	ER
	CK	GS,In,Re,InM	4	Op	2	3x2¾	38.80	6.20	L	10.1-3000	8.6-3000	18.0-3000	95	Y	‡	BM	Car	MS	NgG	ER
	LK	GS,In	4	Ver	1	3x2¾	19.40	5.80	L	4.5-3000	4.0-3000	10.0-1800	...	Y	Ce	BM	Car	Zen	G	HE
Reo	552-556	Lm	4	Ver	1	2x1¾	5.50	6.22	L	1.5-3600	1.2-3000	2.35-2400	29	Y	Av	Mag	Car	Cart	G	HR
Salisbury	600	General Purpose	4	*	1	3x2¾	19.40	6.00	L	6.5-3200	5.25-3200	12.5-2000	56	Y	....	Mag	Car	MS	G,K	Rr
Ultimotor	U200	GS,Co,Ha,Pu,Re,Af	4	Ver	1	2¼x2¼	8.94	5.80	I	3.0-3000	2.5-2600	4.9-2500	43	Y	Fb	Mag	Car	MS	G	Rr
	12	GS,Co,Ha,Pu,Re,Af	4	Ver	1	2x2¼	7.07	6.13	I	2.0-3000	1.5-2200	3.7-2400	38	Y	Fb	Mag	Car	Zen	G	Hc
United	1½ H.P.	GS,Co,Pu,Ha,Af	4	Ver	1	2⅜x2½	11.08	....	L	....	....	....	70	Y	....	Mag	Car	Til	G	Pe
	2 H.P.	GS,Co,Pu,Ha,Af	4	Ver	1	2⅝x2½	13.53	....	L	....	....	....	70	Y	....	Mag	Car	Til	G	Pe
	4 H.P.	GS,Co,Pu,Ha,Af	4	Ver	1	2¾x2½	14.85	....	L	....	....	....	75	Y	....	Mag	Car	Til	G	Pe
Wisconsin	ABN	GS,Co,Pu,Re,Af	4	Ver	1	2½x2¾	13.50	5.65	L	4.6-3600	3.7-3600	7.5-2400	77	Y	Ce	Mag	Car	MS	G	Bp
	AKN	GS,Co,Pu,Re,Af	4	Ver	1	2⅞x2¾	17.80	5.13	L	6.0-3600	4.8-3600	10.4-2400	77	Y	Ce	Mag	Car	MS	G	Bp
	AEH	GS,Co,Pu,Re,Af	4	Ver	1	3x3¼	23.00	4.90	L	6.1-2600	4.9-2600	13.0-2000	155	Y	Ce	Mag	Car	Zen	G	Bp
	AEN	GS,Co,Pu,Re,Af	4	Ver	1	3x3¼	23.00	5.00	...	7.5-3000	6.0-3000	15.4-2200	110	Y	Ce	Mag	Car	Zen	G	Bp
	AFH	GS,Co,Pu,Re,Af	4	Ver	1	3¼x4	33.20	4.60	L	7.2-2200	5.75-2200	19.8-1400	215	Y	Ce	Mag	Car	Zen	G	Hc
	AGH	GS,Co,Pu,Re,Af	4	Ver	1	3½x4	38.50	4.60	L	8.4-2200	6.7-2200	24.2-1400	215	Y	Ce	Mag	Car	Zen	G	Hc
	AHH	GS,Co,Pu,Re,Af	4	Ver	1	3⅝x4	41.30	4.60	L	9.2-2200	7.4-2200	25.8-1300	215	Y	Ce	Mag	Car	Zen	G	Hc
	TE	GS,Co,Pu,Af	4	Ver	2	3x3¼	45.90	4.50	L	11.2-2600	9.0-2600	27.1-1600	220	Y	Ce	Mag	Car	Zen	G	Hc
	TF	GS,Co,Pu,Re,Af	4	Ver	2	3¼x3¼	53.90	4.67	L	13.3-2600	10.6-2600	32.0-1600	220	Y	Ce	Mag	Car	Zen	G	Hc
	VE4	GS,Co,Pu,Re,Af	4	Vee	4	3x3¼	91.90	4.60	L	22.0-2600	17.6-2600	50.0-1600	295	Y	Ce	Mag	Car	Zen	G	Hc
	VF4	GS,Co,Pu,Re,Af	4	Vee	4	3¼x3¼	107.7	4.60	L	25.0-2400	20.0-2400	56.2-1600	295	Y	Ce	Mag	Car	Zen	G	Hc
	VP4	GS,Co,Pu,Re,Af	4	Vee	4	3½x4	154.0	4.67	L	31.0-2200	24.8-2200	88.0-1400	410	Y	Ce	Mag	Car	MS	G	Hc

For abbreviations, see page 161

For Directory of the Manufacturers listed above, see page 63.

SMALL GASOLINE ENGINES

WATER COOLED

MAKE AND MODEL	Designed for Use	Number of Cycles	ENGINE Type	No. of Cylinders	Bore and Stroke (In.)	Total Displacement (Cu. In.)	Compression Ratio (to —1)	Valve Location	Horsepower Rated at RPM	Horsepower Continuous at RPM	Torque—Lb. Ft. at RPM	Weight (Lb.)	GOVERNOR Used	GOVERNOR Type	Ignition System Type	FUEL SYSTEM Type	FUEL SYSTEM Make	Fuel Used	Starting Method
Cushman .... Cub R-14	GS,Co,Ha,Pu,Re,Af	4	Hor	1	3¼x4½	37.33	4.50	L	3.0-850	3.0-850	18.4-800	195	Y	Fb	Mag	MV	Own	G,K,Ng	Hc
.... Cub R-20	GS,Co,Ha,Pu,Re,Af	4	Hor	1	3½x4½	43.29	4.10	L	3.7-850	3.7-850	22.5-700	235	Y	Fb	Mag	MV	Own	G,K,Ng	Hc
.... Cub R-30	GS,Co,Ha,Pu,Re,Af	4	Hor	1	3¾x4½	49.70	4.64	L	4.5-850	4.5-850	28.4-800	245	Y	Fb	Mag	MV	Own	G,K,Ng	Hc
.... Cub R-40	GS,Co,Ha,Pu,Re,Af	4	Hor	1	4x4½	56.50	5.10	L	5.4-850	5.4-850	35.0-800	255	Y	Fb	Mag	MV	Own	G,K,Ng	Hc
Kermath	Tr,In,M	4	Ver	1	2⅝x2⅝	14.20	5.00	L	....	....	....	...	Y	....	Mag	Car	Zen	G	ER
....	Tr,In,M	4	Ver	2	2⅝x2⅝	28.40	5.00	L	5-3200	....	10-2700	62	Y	....	Mag	Car	Zen	G	ER
....	Tr,In,M	4	Ver	4	2⅝x2⅝	56.80	5.00	L	10-3200	....	19-2700	88	Y	....	Mag	Car	Zen	G	ER
Lauson .... PMM	GS,In,M	4	Ver	1	2⅞x2¾	17.85	5.80	L	5.5-3000	4.7-3000	9.6-3000	125	Y	Fb	Mag	Car	Til	G	ER
Le Roi B45	GS,Pu,Re,Af,In	4	Ver	2	2⅞x3½	45.40	5.80	L	10.4-2200	8.3-2000	26.0-1400	450	Y	Fb	BM	CM	ZE	G,D,Ng	HE
.... D81	GS,Pu,Re,Af,In	4	Ver	4	2⅞x3½	90.80	5.80	L	22.2-2200	17.0-2000	60.0-1800	510	Y	Fb	BM	CM	ZE	G,D,Ng	HE
.... D140	GS,Pu,Af,In,Tr	4	Ver	4	3½x3⅝	140.0	5.85	I	33.5-2400	26.5-2200	94.0-1300	650	Y	Fb	BM	CM	ZE	G,D,Ng	HE
Onan .... W3M or S	GS	4	Ver	2	3x2¾	38.80	5.50	...	7.1-1800	7.1-1800	20.4-1850	†450	Y	‡	BM	Car	Zen	G,D,Ng	HE
United 2R14	Af	4	Hor	1	3¼x4½	37.30	....	L	....	....	....	195	Y	(d)	Mag	Car	Til	G,K,D	Hc
.... 3R20	Af	4	Hor	1	3½x4½	43.25	....	L	....	....	....	235	Y	(d)	Mag	Car	Til	G,K,D	Hc
.... 4R30	Af	4	Hor	1	3¾x4½	49.75	....	L	....	....	....	245	Y	(d)	Mag	Car	Til	G,K,D	Hc
Universal .... AFTC	GS	4	Ver	2	3x3½	49.50	5.70	L	6.0-1200	6.0-1350	25.0-1200	385	Y	Mo	BM	Car	Str	G	HE

ABBREVIATIONS

*—Cylinder 45° from horizontal
†—Weight includes generator
‡—Flyweights on camshaft
(a)—Inclined 20° up from horizontal
(c)—On part oil to 16 parts gasoline
(d)—Automatic—controlled by flywheel
(e)—Rotary intake valve in crankcase.
Af—Auxiliary farm implement equipment
Am—Amal
Av—Air Vane
Bat—Battery
Bl—Blowers
BM—Battery and Magneto
Bp—Belt or pulley
CA—Centrifugal or Air Vane
Car—Carburetor
Cart—Carter carburetor
CC—Carter carburetor—Clinton Mixing Bowl
Ce—Centrifugal
CM—Carburetor or Mixing Valve
Co—Air Compressor
CS—Chain Saws
D—Distillate
Ele—Electric
ER—Electric or Rope
Fb—Flyball
G—Gasoline
GS—Generator Sets
Ha—Home appliances
Hc—Hand Crank
HE—Hand Crank or Electric
Hor—Horizontal
HP—Hand crank, belt or pulley.
HR—Hand Crank or Rope
Ho—Hoists
I—In head
In—Industrial
InM—Inboard Marine
K—Kerosene
L—"L" Head
Lm—Lawn Mowers
Mag—Magneto
M—Marine
Mo—Mechanical
MS—Marvel-Schebler Carburetor Div.
MV—Mixing Valve
N—No or None
Ng—Natural gas
NgG—Combination gas and gasoline
Op—Opposed.
OZ—Own and Zenith
PB—Pedal or Belt or Pulley
Pe—Pedal
Pl—Pulley
Pn—Pneumatic
Pu—Pumps
Rc—Recoil
Re—Refrigerating equipment
Rr—Recoil or Rope
Str—Stromberg Carburetor Div.
Til—Tillotson Mfg. Co.
Tr—Tractors
Va—Valve
Ver—Verticle.
Y—Yes.
ZE—Zenith Carburetor—Ensign Mixing Valve
ZEM—Zenith carburetor—Ensign mixing valve, or Marvel-Schebler carburetor.
Zen—Zenith Carburetor Div.

For Directory of the Manufacturers listed above, see page 63.

Registration of Numbered Motor Boats*

	Coast Guard District	1949	1948
1	Boston	32,953	31,539
2	St. Louis	43,841	43,690
3	New York	77,048	74,590
5	Norfolk	46,114	44,768
7	Miami	27,825	26,722
8	New Orleans	44,196	42,135
9	Cleveland	90,143	89,161
11	Long Beach	10,270	9,757
12	San Francisco	20,096	19,660
13	Seattle	49,403	48,051
14	Honolulu	3,198	3,964
	Total	445,087	434,037

* U. S. Coast Guard

AMERICAN OUTBOARD MOTORS

Make	Model	Power Head	Number of Cylinders	Cylinder Material	Bore and Stroke (In.)	Piston Displacement (Cu. In.)	Engine Type	Brake Hp. at R.P.M. O.B.C. Rating	Engine Weight (Lb.) Fully Equipped	Piston Rings—Number and Width	Propeller: Diameter (In.)	Propeller: Pitch	Propeller: Right or Left Hand Rotation	Propeller: Number of Blades	Starting Device	Fuel Tank Capacity (Pts.)	Gear: Ratio	Gear: Tooth Pitch	Gear: Material (S.A.E. No.)	Gearcase Bearing	Magneto Make	Carburetor: Make	Carburetor: Size (In.)	Carburetor: Starting Mixture Obtained by—	Spark Plug—Make and Model	Bearings: Main	Bearings: Connecting Rod	Cooling System	Reverse	Lubrication—Pints Oil to 1 Gal. Gasoline
Champion	1K	RV	1	ACS	2 1/16x1 3/4	5.84	S	4.2-4300	37	2-1/8	8	5 1/2	R	2	Cord	10	14-24	12.00	NE8640	Pl	BS	Til	...	Ch	CH-7	Pl	A	Ce	No	3/4
	2K	RV	1	ACS	2 1/16x1 3/4	5.84	S	4.2-4300	39	2-1/8	8	5 1/2	R	2	RR	10	14-24	12.00	NE8640	Pl	BS	Til	...	Ch	CH-7	Pl	A	Ce	Yes	3/4
	1J	RV	1	ACS	2 1/16x1 3/4	5.84	S	4.2-4300	...	2-1/8	8	5 1/2	R	2	Cord	10	14-24	12.00	NE8640	Pl	BS	Til	...	Ch	CH-7	Pl	A	Ce		3/4
	2L-HD	RV	1	ACS	2 1/16x1 3/4	5.84	S	4.2-4300		2-1/8					RR	10	14-24	12.00	NE8640	Bo	BS	Til	...	Ch	CH-7	Pl	A	VP	Yes	3/4
	4K	RV-Re.V	2	ACS	2 1/8x1 3/4	12.41	AF	7.9-4200	49 1/2	2-1/8	8 1/4	8 1/2	R	2	RR	12	14-24	12.00	NE8640	Pl	BS	Til	...	Ch	CH-7	Pl	A	Ce	Yes	3/4
	4L-S	RV-Re.V	2	ACS	2 1/8x1 3/4	12.41	AF	7.9-4200	...	2-1/8	8 1/4	10	L	2	RR	12	14-24	12.00	NE8640	Bo	BS	Til	...	Ch	CH-H16A	Pl	A	VP	Yes	2
	4L-HD	RV-Re.V	2	ACS	2 1/8x1 3/4	12.41	AF	7.9-4200	...	2-1/8	8 1/4	10	L	2	RR	12	14-24	12.00	NE8640	Bo	BS	Til	...	Ch	CH-7	Pl	A	VP	Yes	3/4
Chris-Craft	Challenger-J	Re.V-2 Port	2	MI	2x1 1/2	9.42	AF	5.5-4000*	46	2-1/16	8 3/4	8	L	2	RR	10 1/2	14-26	12.00	4615	Pl	Scin	Til	15/16	Ch	CH-J8J	Pl	Pl	Rot	Yes	1/2
		Re.V-2 Port	2	CI	2 1/2x2 1/32	19.94	AF	10.0-4000*	63	2-1/16	8 5/8	10 1/2	L	2	RR	14	17-21	12.00	4615	A	Scin	Til	1	Ch	CH-J-7	A	A	Ce	Yes	3/4
Corsair	5020	Re.V-2 Port	1	ACS	2 1/8x1 3/4	6.21	S	3.6-4000	39	2-1/8	7 1/2	6	R	2	RR	8	13-21	12.56	8640	Bo	Sp	Til	3/4	Ch	CH-H10	Pl	Bo	Rot	No	1/2
	5021	Re.V	1	ACS	2 1/8x1 3/4	6.21	S	4.0-4200	44	2-1/8	7 1/2	6	R	2	RR	8	13-21	10.75	8640	Bo	Sp	Til	3/4	Ch	CH-H10	Pl	Bo	Fvr	Yes†	1/2
	5027	Re.V-2 Port	2	ACS	1 11/16x1 21/32	7.48	AF	5.0-4200	45	2-1/8	7 1/2	7	R	2	RR	8	13-21	10.75	8640	Bo	Sp	Til	11/16	Ch	CH-H10	Bo	Bo	Fvr	Yes†	1/2
	5023	Re.V-2 Port	2	ACS	2x1 3/4	11.00	AF	7.5-4200	54	2-1/8	8	7 1/2	R	2	RR	8	13-21	10.75	8640	Bo	Phe	Til	11/16	Ch	CH-H10	Pl	Bo	Fvr	Yes†	1/2
Elgin	5830	Re.V-2 Port	1	ACS	1 1/2x1 3/8	2.43	S	1.2-4000	19 1/2	2-3/32	6 1/2	5	L	2	Cord	3 1/2	12-21	14.00	X1315	Pl	Wico	Til	11/32	Ch	AS-C13	Bo	Pl	Air	No	3/4
	5840	Re.V-2 Port	1	ACS	2x1 9/16	4.90	S	2.5-4000	29 1/2	2-1/8	7 1/2	4 1/2	L	2	Cord	7 1/2	14-21	12.00	X1315	Pl	Wico	Til	1/2	Ch	AS-C13	Bo	Pl	VP	No	1/2
	5855	Re.V-2 Port	2	ACS	1 3/4x1 9/16	7.52	AF	5.0-4000	44 1/4	3-1/16	7 1/2	6	L	2	RR	8	14-21	12.00	NE8640	Pl	Wico	Til	9/16	Ch	AS-C13	Bo	Pl	VP	Yes	3/4
	5874	Re.V-2 Port	2	ACS	2x1 11/16	10.60	AF	7.5-4000	48 3/4	3-1/16	7 1/2	8	L	2	RR	11	14-21	12.00	NE8640	Pl	Wico	Til	9/16	Ch	AS-C13	Bo	Pl	VP	Yes	3/4
	5882	Re.V-2 Port	2	ACS	2 5/16x2 27/32	24.00	AF	16.0-4000*	80	3-1/16	9 1/2	10	R	3	RR	46^	14-21	9.00	8640	A	FM	Til	13/16	Ch	AS-C13	A	Bo	VP	Yes	3/4
Evinrude	Sportsman 4425	...	1	...	1 5/8x1 1/2	3.10	S	1.5-4000	30	2-3/32	6 7/8	5 1/2	...	2	RR	4 1/2	12-23	...	...	...	Own	Own	...	...	CH-J6-J	...	...	...	Yes	1/3
	Sportwin 4423	...	2	...	1 5/8x1 1/2	6.22	AF	3.3-4000	39	3-3/32	6 7/8	4 3/4	...	2	RR	6 1/2	13-18	...	...	...	Own	Own	...	...	CH-J6-J	...	...	...	Yes	1/3
	Fleetwin 4434	...	2	...	2 1/8x1 3/4	12.40	AF	7.5-4000	49	3-3/32	8	8	...	2	RR	9	13-20	...	...	...	Own	Own	...	...	CH-J6-J	...	...	...	...	...
	Fastwin 4438	...	2	...	2 3/8x2 1/4	19.94	AF	14.0-4000	58	3-3/32	8 1/2	10	...	3	RR	48^	12-22	...	...	...	Own	Own	...	...	CH-J6-J	...	...	...	...	...
	Speeditwin 6039	RV-2 Port	2	...	2 3/4x2 1/2	30.00	O	22.5-4000	115	3-3/32	10 1/2	10 1/2	L	3	Cord	20	15-21	...	...	...	Own	Own	...	...	CH-5M-J	...	...	Ce	No	1 1/2
	Speedifour 7031	RV-2 Port	4	...	2 1/2x2 1/2	50.00	O	33.4-4000	150	3-3/32	10 1/2	12 7/8	L	3	Cord	29	15-21	...	...	...	Own	Own	...	...	CH-5M-J	...	...	Ce	No	1 1/2
	Bigfour 8015	RV-2 Port	4	...	2 3/4x2 1/2	59.40	O	50-5000	178	2-1/8	10 1/2	12 7/8	L	3	Cord	29	15-21	...	...	...	Own	Vac	...	...	CH-R7-64C	...	...	Ce	No	1 1/2
Firestone	133-0-5010	Rev.-2 Port	1	ACS	2 1/8x1 3/4	6.21	S	3.6-4000	39	2-1/8	7 1/2	6	R	2	RR	8	13-21	12.56	8640	Bo	Phe	Til	3/4	Ch	CH-H10	Pl	Bo	Rot	No	1/2
	133-0-5011	Rev.-2 Port	1	ACS	2 1/8x1 3/4	6.21	S	4.0-4200	44	2-1/8	7 1/2	6	R	2	RR	8	13-21	10.75	8640	Bo	Phe	Til	3/4	Ch	CH-H10	Pl	Bo	Fvr	Yes†	1/2
	133-0-5017	Rev.-2 Port	2	ACS	1 11/16x1 21/32	7.48	AF	5.0-4200	45	2-1/8	7 1/2	7	R	2	RR	8	13-21	10.75	8640	Bo	Phe	Til	11/16	Ch	CH-H10	Bo	Bo	Fvr	Yes†	1/2
	133-0-5013	Rev.-2 Port	2	ACS	2x1 3/4	11.00	AF	7.5-4200	54	2-1/8	8	7 1/2	R	2	RR	8	13-21	10.75	8640	Bo	Phe	Til	11/16	Ch	CH-H10	Pl	Bo	Fvr	Yes†	1/2
Flambeau	174520	3 Port	1	CI	1 15/16x1 9/16	4.62	S	2.5-4000	26	3-3/32	7	6	L	2	Cord	6	13-24	12.00	1315	Pl	Eis	Own	...	Fl	CH-J7J	Pl	Pl	Roi	No	2/3
	174060	3 Port	2	CI	1 15/16x1 9/16	9.24	AF	5.0-4000	32	3-3/32	8	8 1/2	L	2	Cord	6	13-24	12.00	1315	Pl	Eis	Own	...	Fl	CH-J7J	Pl	Pl	Roi	No	2/3
Hiawatha	840-MI-25-7945A	Rev.-2 Port	1	ACS	1 5/8x1 1/2	3.11	S	1.5-4000	21	2-3/32	6 1/2	Var	L	2	Cord	4	13-22	13.56	4615	Pl	Own	Til	7/16	Ch	CH-J6-J	Pl	Pl	Rot	Yes	1/2
	O5-OMI-25-7958A	Rev.-2 Port	1	ACS	2 1/8x1 1/2	5.32	S	3.0-4000	28	2-3/32	6 1/2	Var	L	2	Cord	4	13-22	13.56	4615	Pl	Own	Own	1/2	Pr	CH-J6-J	Pl	Pl	Rot	Yes	1/2
	940-MI-25-7972A	Rev.-2 Port	2	ACS	1 15/16x1 1/2	8.84	AF	5.0-4000	45	3-3/32	7 1/2	7 1/4	L	2	RR	6	13-20	10.38	4615	Pl	Own	Own	1/2	Pr	CH-J6-J	Pl	Pl	Rot	Yes	1/2
	940-MI-25-7980A	Rev.-2 Port	2	ACS	2 3/8x2 1/4	19.94	AF	12.0-4000	66	3-3/32	9 1/4	Var	L	2	RR	12	13-19	8.00	4615	Pl	Own	Til	5/8	Ch	CH-J6-J	Pl	Pl	Rot	No	1
Johnson	HD	RV-3 Port	2	ACS	1 3/8x1 3/8	4.08	AF	2.5-4000	31	2-3/32	6 5/8	8 1/4	R	2	RR	4 7/8	13-20	13.33	4615	Pl	Own	Own	1/2	Pr	CH-J8J	Pl	Pl	Rot	Yes	1/2
	TN	RV-3 Port	2	ACS	1 15/16x1 1/2	8.84	AF	5.0-4000	44	3-3/32	8	7 1/4	R	2	RR	7	14-25	12.00	4615	Pl	Own	Own	11/16	Pr	CH-J8J	Pl	Pl	Rot	Yes†	1/2
	QD	Rev.-2 Port	2	ACS	2 3/8x1 7/8	16.60	AF	10.0-4000	56♦	3-3/32	9	8	R	3	RR	40^	14-24	10.80	4615	A	Own	Own	7/8	Pr	CH-J6J	A	A	VV	Yes	1/2
	SD	RV-2 Port	2	ACS	2 1/2x2 1/4	22.09	AF	16.0-4000	85 1/2♦	3-3/32	10	10	R	3	RR	40^	14-24	10.00	4615	Bo	Own	Own	7/8	Pr	CH-5MJ	Pl	A	HV	No	1/2
	PO	RV-2 Port	2	NCI	2 3/4x2.52	29.92	O	22.0-4000	115 3/4	3-1/8	10 3/8	12 1/2	R	3	Cord	20	12-21	7.50	4615	Bo	Own	RFB	2	Ch	CH-R7	Pl	A	PV	No	1/2
Martin	20	Pop	1	CI	1 9/16x1 1/2	2.88	S	2 1/3-4300	31	3-3/32	6 1/2	4 1/2	R	2	RR	7	13-20	(a)	4150	Pl	Wico	Til	1/2	Fl	CH-J6J	Pl	Pl	Roi	Yes	1/2
	40	Pop	2	CI	1 9/16x1 1/2	5.76	AF	4.5-4300	36	3-3/32	7 1/2	6	R	2	RR	7	13-20	(a)	4150	Pl	Wico	Til	9/16	Fl	AL-AN7X	Pl	Pl	Roi	Yes	1/2
	60	Pop	2	CI	2x1 3/4	11.00	AF	7.2-4000	44	3-3/32	8	8	R	2	RR	8	13-20	(a)	4150	Pl	Wico	Til	3/4	Fl	AL-AN7X	Pl	Pl	Roi	Yes	3/4
Neptune	A-1	Rev.-2 Port	1	ACS	1 9/16x1 1/2	2.87	S	1.7-4000	17	2-3/32	6	5	L	2	Cord	2	13-20	14.00	Dab	Pl	Phe	Til		Fl	CH-J10	Pl	Pl	Ce	No	2/3
	A-2	Rev.-2 Port	1	ACS	2 1/16x1 1/2	5.01	S	3.3-4000	30	3-3/32	7 1/2	5 1/8	R	2	Cord	4	13-20	14.00	2345	Pl	Phe	Til		Fl	CH-J10	A	Pl	Rot	Yes	2/3
	AA-2	Rev.-2 Port	1	ACS	2 1/16x1 1/2	5.01	S	3.3-4000	33	3-3/32	7 1/2	5 1/8	R	2	RR	5 1/3	13-20	14.00	2345	Pl	Phe	Til	...	Ch	CH-J10	A	Pl	Rot	Yes	3/4
	AA-4	Rev.-2 Port	2	ACS	1 3/4x1 1/2	7.20	AF	5.0-4000	40	3-3/32	7 1/2	5 1/8	R	2	RR	5 1/3	13-20	14.00	2345	Pl	Wico	Til	...	Ch	CH-J10	A	Pl	Rot	Yes	1/2
	AA-6	Rev.-2 Port	2	ACS	2 1/16x1 1/2	10.02	AF	7.0-4000	52	3-3/32	8	7	R	2	RR	8	14-21	12.00	2345	Bo	Wico	Til	...	Ch	CH-J10	A	Pl	Ce	No	3/4
	AA-10	Rev.-2 Port	2	ACS	2 1/4x2	15.90	AF	10.0-4000	62	3-3/32	9	9	R	3	RR	8	12-21	8.00	2345	Bo	Wico	Til	...	Ch	CH-J10	A	A	Ce	No	2/3
Royal	1A10	Rev.-2 Port	1	ACS	1 5/8x1 1/2	3.11	S	1.5-4000	21	2-3/32	6 1/2	Var	L	2	Cord	4	13-22	13.56	4615	Pl	Own	Til	7/16	Ch	CH-J6-J	Pl	Pl	Rot	Yes	1/2
	2A7	Rev.-2 Port	2	ACS	1 15/16x1 1/2	8.84	AF	5.0-4000	45	3-3/32	7 1/2	7 1/4	L	2	RR	6	13-20	10.38	4615	Pl	Own	Own	1/2	Pr	CH-J6-J	Pl	Pl	Rot	Yes	1/2
	2A8	Rev.-2 Port	2	ACS	2 3/8x2 1/4	19.94	AF	12.0-4000	66	3-3/32	9 1/4	Var	L	2	RR	12	13-19	8.00	4615	Pl	Own	Own	5/8	Ch	CH-J6-J	Pl	Pl	Rot	No	1

AMERICAN OUTBOARD MOTORS—*Concluded*

MAKE AND MODEL		Power Head	Number of Cylinders	Cylinder Material	Bore and Stroke (In.)	Piston Displacement (Cu. In.)	Engine Type	Brake Hp. at R.P.M. O.B.C. Rating	Engine Weight (Lb.) Fully Equipped	Piston Rings—Number and Width	Propeller: Diameter (In.)	Propeller: Pitch	Propeller: Right or Left Hand Rotation	Propeller: Number of Blades	Starting Device	Fuel Tank Capacity (Pts.)	Gear: Ratio	Gear: Teeth Pitch	Gear: Material (S.A.E. No.)	Gearcase Bearing	Magneto Make	Carburetor: Make	Carburetor: Size (In.)	Carburetor: Starting Mixture Obtained by—	Spark Plug—Make and Model	Bearings: Main	Bearings: Connecting Rod	Cooling System	Reverse	Lubrication—Pints Oil to 1 Gal. Gasoline
Scott-Atwater	500	Rev.-2 Port	1	ACS	2 1/8x1 3/4	6.21	S	3.6-4000	43	2-1/8	7½	6	R	2	RR	8	13-21	12.56	8640	Bo	Wico	Til	[illegible]	Ch	CH-H10	Pl	Bo	Rot	No	½
	501	Rev.-2 Port	1	ACS	2 1/8x1 3/4	6.21	S	4.0-4200	45	2-1/8	7½	6	R	2	RR	8	13-21	10.75	8640	Bo	Wico	Til	[illegible]	Ch	CH-H10	Pl	Bo	Fvr	Yes†	½
	507	Rev.-2 Port	2	ACS	1 11/16x1 21/32	7.48	AF	5.0-4200	46	2-1/8	7½	7	R	2	RR	8	13-21	10.75	8640	Bo	Wico	Til	[illegible]	Ch	CH-H10	Bo	Bo	Fvr	Yes†	½
	503	Rev.-2 Port	2	ACS	2x1 3/4	11.00	AF	7.5-4200	53	2-1/8	8	7½	R	2	RR	8	13-21	10.75	8640	Bo	Wico	Til	[illegible]	Ch	CH-H10	Pl	Bo	Fvr	Yes†	½
	509	Rev.-2 Port	2	ACS	2 11/32x2 5/16	19.95	AF	....	....	3-3/32	....	....	R	3	RR	40▲	17-23	10.00	8640	A	Wico	Til	...	Ch	CH-5M	A	A	Fvr	Yes†	½
Sea Bee	025-3562	Rev.-2 Port	1	ACS	1 5/8x1 1/2	3.11	S	1.5-4000	21	2-3/32	6½	Var	L	2	Cord	4	13-22	13.56	4615	Pl	Own	Til	7/16	Ch	CH-J6-J	Pl	Pl	Rot	Yes	½
	025-3563	Rev.-2 Port	1	ACS	2 1/8x1 1/2	5.32	S	3.0-4000	28	2-3/32	6½	Var	L	2	Cord	4	13-22	13.56	4615	Pl	Own	Own	½	Pr	CH-J6-J	Pl	Pl	Rot	Yes	½
	025-3564	Rev.-2 Port	2	ACS	1 15/16x1 1/2	8.84	AF	5.0-4000	45	3-3/32	7½	7¼	L	2	RR	6	13-20	10.38	4615	Pl	Own	Own	½	Pr	CH-J6-J	Pl	Pl	Rot	Yes	½
	025-3565	Rev.-2 Port	2	ACS	2 3/8x2 1/4	19.94	AF	12.0-4000	66	3-3/32	9¼	Var	L	2	RR	12	13-19	8.00	4615	Pl	Own	Til	5/8	Ch	CH-J6-J	Pl	Pl	Rot	No	1
Sea King	94GG-9003A	Rev.-2 Port	1	ACS	1 5/8x1 1/2	3.11	S	1.5-4000	21	2-3/32	6½	Var	L	2	Cord	4	13-22	13.56	4615	Pl	Own	Til	7/16	Ch	CH-J6-J	Pl	Pl	Rot	Yes	½
	94GG-9007A	Rev.-2 Port	1	ACS	2 1/8x1 1/2	5.32	S	3.0-4000	28	2-3/32	6½	Var	L	2	Cord	4	13-22	13.56	4615	Pl	Own	Own	½	Pr	CH-J6-J	Pl	Pl	Rot	Yes	½
	94GG-9014A	Rev.-2 Port	2	ACS	1 15/16x1 1/2	8.84	AF	5.0-4000	45	3-3/32	7½	7¼	L	2	RR	6	13-20	10.38	4615	Pl	Own	Own	½	Pr	CH-J6-J	Pl	Pl	Rot	Yes	½
	94GG-9017A	Rev.-2 Port	2	ACS	2 3/8x2 1/4	19.94	AF	12.0-4000	66	3-3/32	9¼	Var	L	2	RR	12	13-19	8.00	4615	Pl	Own	Til	5/8	Ch	CH-J6-J	Pl	Pl	Rot	No	1
Spiegel	230-50-1	Rev.-2 Port	1	ACS	1 5/8x1 1/2	3.11	S	1.5-4000	21	2-3/32	6½	Var	L	2	Cord	4	13-22	13.56	4615	Pl	Own	Til	7/16	Ch	CH-J6-J	Pl	Pl	Rot	Yes	½
	230-50-3	Rev.-2 Port	1	ACS	2 1/8x1 1/2	5.32	S	3.0-4000	28	2-3/32	6½	Var	L	2	Cord	4	13-22	13.56	4615	Pl	Own	Own	½	Pr	CH-J6-J	Pl	Pl	Rot	Yes	½
	230-50-5	Rev.-2 Port	2	ACS	1 15/16x1 1/2	8.84	AF	5.0-4000	45	3-3/32	7½	7¼	L	2	RR	6	13-20	10.38	4615	Pl	Own	Own	½	Pr	CH-J6-J	Pl	Pl	Rot	Yes	½
	230-50-12	Rev.-2 Port	2	ACS	2 3/8x2 1/4	19.94	AF	12.0-4000	66	3-3/32	9¼	Var	L	2	RR	12	13-19	8.00	4615	Pl	Own	Til	5/8	Ch	CH-J6-J	Pl	Pl	Rot	No	1

ABBREVIATIONS

†—Includes neutral.
▲—Separate gas tank.
*—Advertised horsepower.
♦—Less gas tank which is separate from motor.
(a)—0.250 circular pitch.
A—Antifriction.
ACS—Aluminum with cast iron sleeves.
AF—Alternate firing.
AL—Electric Auto-Lite Co.
AS—All-State.
Bo—Both—plain and anti-friction bearing.
BS—Bendix-Scintilla Magneto Div.
Ce—Centrifugal.
Ch—Choke.
CH—Champion Spark Plug Co.
CI—Cast iron.
Dab—Die cast aluminum bronze.
Eis—Eiseman (Jack & Heintz Precision Ind.).
Fl—Flooding.
FM—Fairbanks Morse & Co.
Fvr—Flexible vane rotor.
HV—Hi-Vac.
L—Left.
MI—Meehanite iron.
NCI—Nickel cast iron.
O—Opposed.
Phe—Phelan (Wico Electric Co.).
Pl—Plain.
Pop—Poppet valve.
Pr—Primer.
PV—Pressure vacuum.
R—Right.
Re.V—Reed valve.
RFB—R. F. Bracke Co.
Roi—Rotary impeller.
Rol—Rollator rubber.
Rot—Rotary pump.
RR—Rewinding rope.
RV—Rotary valve.
S—Single.
Scin—Scintilla Magneto Div.
Sp—Splitdorf (Edison, Inc.)
Til—Tillotson Mfg. Co.
Vac—Vacturi.
Var—Variable.
VP—Vane pump.
VV—Vari-Vol.

For Directory of the Manufacturers listed above, see page 63.

Shipments of Outboard Motors, by Quarters, 1947-1949

As Reported by the Outboard Motor Manufacturers Association of Member Companies

For Fiscal Years Ending September 30 of Each Year

Hp Range	Quarters Ending Dec. 31, 1946	Mar. 31, 1947	June 31, 1947	Sept. 30, 1947	Total Fiscal Year 1947	Quarters Ending Dec. 31, 1947	Mar. 31, 1948	June 30, 1948	Sept. 30, 1948	Total Fiscal Year 1948	Quarters Ending Dec. 31, 1948	Mar. 31, 1949	June 30, 1949	Sept. 30, 1949	Total Fiscal Year 1949
0.0– 2.3	6,794	13,518	22,246	10,636	53,194	11,575	11,081	17,160	7,208	47,024	5,602	4,227	3,852	2,062	15,743
2.4– 4.3	62,999	65,627	65,629	47,361	241,616	30,270	53,100	35,947	21,057	140,374	10,250	17,515	19,476	6,967	54,208
4.4– 7.0	32,072	37,077	50,623	43,966	163,738	43,731	45,071	50,514	22,946	162,262	23,056	29,106	45,110	16,484	113,756
7.1–12.0	11,970	13,345	14,868	13,599	53,782	10,946	17,605	23,526	11,900	63,977	7,177	29,304	23,092	9,685	69,258
12.1–20.0	1,567	1,180	2,258	1,846	6,851	1,397	1,451	2,103	1,576	6,527	1,307	1,350	1,766	791	5,214
20.0 and up	2,020	1,649	1,346	1,698	6,713	1,942	1,533	2,677	650	6,802	807	2,700	2,151	1,120	6,778
Totals	117,422	132,396	156,970	119,106	525,894	99,861	129,841	131,927	65,337	426,966	48,199	84,202	95,447	37,109	264,957

BRITISH PASSENGER CARS

Make	Model	Engine: Number of Cylinders, Bore and Stroke (In.)	Engine: Max. Brake Hp. at Specified R.P.M.	Engine: Piston Displacement (Cu. In.)	Engine: Compression Ratio (To-1)	Engine: Cylinder Arrangement	Engine: No. of Main Bearings	Engine: Valve Location	Engine: Crankcase Type	Engine: Piston Material	Engine: Camshaft Drive	General Data: Wheelbase (In.)	General Data: Tread Front (In.)	General Data: Tread Rear (In.)	General Data: Tires (In.)	General Data: Oil Pressure to—	General Data: Carburetor—No. Used and Type	General Data: Cooling System	General Data: Clutch Type	Transmission: Location	Transmission: Type	Transmission: No. of Forward Speeds	Transmission: Synchronizing Clutches	Rear Axle: Final Drive Type	Rear Axle: Gear Ratio (to-1)	Rear Axle: Torque taken by	Independent Suspension	Service Brakes	Shipping Weight (Lb.)
Allard	J	8-3.32x3.88	120-3800	267.0	6.00	V	3	L	In	AL	Hg	100.0	56.0	52.0	6.00/16	abce	2-Do	Tp	SP	U	Hs	3	Y	SB	3.50	ta	F	H	1904
	K	8-3.06x3.75	85-3500	220.9	6.00	V	3	L	In	AL	Hg	106.0	56.0	52.0	6.25/16	abce	1-Do	Tp	SP	U	Hs	3	Y	SB	3.78	tt	F	H	2632
	L	8-3.06x3.75	85-3500	220.9	6.00	V	3	L	In	AL	Hg	112.0	56.0	52.0	6.25/16	abce	1-Do	Tp	SP	U	Hs	3	Y	SB	3.78	tt	F	H	2844
	M, P	8-3.06x3.75	85-3500	220.9	6.00	V	3	L	In	AL	Hg	112.0	56.0	58.0	6.25/16	abce	1-Do	Tp	SP	U	Hs	3	Y	SB	3.78	tt	F	H	3024
Alvis	T. A. 14	4-2.91x4.33	65-4000	115.4	6.72	IL	3	I	In	AL	C	108.0	54.0	54.0	6.00/16	abe	1-Ho	Pu	SP	U	Hs	4	Y	Hy	4.87	Sp	N	M	3080
	T. B. 14	4-2.91x4.33	68-4000	115.4	6.72	IL	3	I	In	AL	C	108.0	54.0	54.0	6.00/16	abe	2-Ho	Pu	SP	U	Hs	4	Y	Hy	4.30	Sp	N	M	2730
Armstrong Siddeley	16HP	6-2.70x3.94	75-4200	140.9	6.50	IL	...	I	In	AL	C	115.0	54.0	54.5	5.50/17	abce	1-Do	Pu	SP	U	[illegible]	4	Y	Hy	5.10	Sp	F	H	3190
Aston Martin	2 Litre	4-3.28x3.62	90-4750	120.2	7.25	IL	...	I	In	AL	C	108.0	54.0	54.0	5.75/16	abc	2-...	Pu	SP	U	Hc	4	Y	Hy	4.10	ta	F	H	2520
Austin	A40	4-2.87x3.50	40-4300	73.2	7.20	IL	3	I	In	AL	C	92.5	48.5	49.5	5.25/16	abce	1-Do	Pu	SP	U	Hs	4	Y	SB	5.14	Sp	F	Mh	2128
	A70	4-3.12x4.37	68-3800	134.1	6.80	IL	3	I	In	AL	C	96.0	53.5	55.5	5.50/16	abce	1-Do	Pu	SP	U	Hs	4	Y	SB	4.12	Sp	F	Mh	2800
	A90	4-3.43x4.37	88-4000	162.2	7.50	IL	3	I	In	AL	C	96.0	53.5	55.5	5.50/16	abce	2-Ho	Pu	SP	U	Hs	4	Y	SB	3.66	Sp	F	Mh	2828
	A125	6-3.43x4.37	...	243.0	6.80	IL	4	I	In	AL	C	119.2	58.0	60.0	6.50/16	abce	1-Do	Pu	SP	U	Hs	4	Y	Hy	4.45	Sp	F	H	3958
	A135	6-3.43x4.37	130-3700	243.0	6.80	IL	4	I	In	AL	C	119.2	58.0	60.0	6.50/16	abce	3-Ho	Pu	SP	U	Hs	4	Y	Hy	4.09	Sp	F	H	4056
Bentley	Mark VI	6-3.50x4.50	...	260.0	6.40	IL	7	F	Fh	AL	Hg	120.0	...	58.5	6.50/16	...	2-Ho	...	SP	U	Hs	4	Y	Hy	3.73	Sp	F	ϕ	...
Bristol	400, 401*	6-2.60x3.78	80-4200	120.2	7.50	IL	4	I	In	AL	C	114.0	51.7	54.0	5.50/16	abcde	3-Do	Pu	SP	U	Hs	4	Y	SB	3.90	ra	A	H	2860
Citroen	15	4-3.07x3.94	56-4300	116.5	6.20	IL	3	I	In	AL	C	114.5	54.0	53.5	6.50/16	abce	1-Do	Pu	SP	U	Hs	3	Y	SB	3.45	...	F	H	2352
	Six	6-3.07x3.94	76-3700	175.0	6.40	IL	4	I	In	AL	C	121.5	58.5	5.75	7.25/16	abce	1-Do	Pu	DP	U	Hs	3	Y	SB	3.88	...	F	H	3082
Daimler	DB-18	6-2.74x4.35	70-4200	154.0	7.00	IL	4	I	In	AL	C	114.0	52.0	52.0	6.00/16	abce	1-Ho	Pu	H	U	Pr	4	Y	Hy	4.36	Sp	F	Hm	3440
	Special Sports	6-2.74x4.35	85-4200	154.0	7.00	IL	4	I	In	AL	C	114.0	52.0	52.0	6.00/16	abce	2-Ho	Pu	H	U	Pr	*	Y	Wo	4.85	Sp	F	Hm	3520
	DE-27	6-3.35x4.72	110-3600	250.0	6.30	IL	4	I	In	AL	C	138.4	60.0	63.0	8.00/17	abce	1-Do	Pu	H	U	Pr	4	Y	Hy	4.72	Sa	F	Hm	5570
	DE-36	8-3.35x4.72	150-3600	333.0	6.30	IL	5	I	In	AL	C	147.0	60.0	63.0	8.00/17	abce	2-Ho	Pu	H	U	Pr	4	Y	Hy	4.09	Sa	F	Hm	5910
Ford	Except N. A. Anglia	4-2.23x3.64	23-4000	56.9	6.30	IL	3	L	In	AL	C	90.0	45.0	45.0	4.50/17	abce	1-Do	Th	SP	U	Hs	3	Y	SB	5.50	tt	N	M	1636
	N. A. Anglia	4-2.50x3.64	30-4000	71.5	6.16	IL	3	L	In	AL	C	94.0	45.0	45.0	5.00/16	abce	1-Do	Th	SP	U	Hs	3	Y	SB	5.50	tt	N	M	1657
	Prefect	4-2.50x3.64	30-4000	71.5	6.16	IL	3	L	In	AL	C	94.0	45.0	45.0	5.00/16	abce	1-Do	Th	SP	U	Hs	3	Y	SB	5.50	tt	N	M	1808
	Pilot	8-3.06x3.75	85-3500	221.0	6.15	V	3	L	In	AL	Hg	108.2	55.9	58.0	6.00/16	abce	1-Do	Tp	SP	U	Hs	3	Y	SB	3.78	tt	N	M	3192
Frazer-Nash	Lemans Replica	6-2.60x3.78	120-5500	120.2	9.00	IL	4	I	In	AL	C	96.0	48.0	48.0	5.25/16	abcde	3-Do	Pu	SP	U	Hs	4	Y	SB	3.50	ra	A	H	1484
	Cabriolet	6-2.60x3.78	85-4500	120.2	7.50	IL	4	I	In	AL	C	108.0	48.0	54.0	5.50/16	abcde	3-Do	Pu	SP	U	Hs	4	Y	SB	3.90	ra	A	H	2180
	Mille Miglia	6-2.60x3.78	120-5500	120.2	9.00	IL	4	I	In	AL	C	96.0	48.0	48.0	5.25/16	abcde	3-Do	Pu	SP	U	Hs	4	Y	SB	3.50	ra	A	H	1710
Hillman	Minx	4-2.56x3.74	42-4200	77.2	6.60	IL	3	L	In	AL	C	93.0	48.6	48.5	5.50/15	abce	1-Do	Pu	SP	U	Hs	4	Y	SB	5.22	Sp	F	H	1995
H. R. G.	1100CC	4-2.36x3.74	40-5200	65.5	7.75	IL	3	I	In	AL	C	100.5	48.0	45.0	5.50/17	abce	2-Do	Pu	SP	U	Hs	4	Y	SB	4.55	Sp	N	M	...
Humber	Super Snipe	6-3.35x4.72	100-3400	249.2	6.25	IL	4	L	In	AL	C	117.5	57.9	61.0	6.50/16	abcde	1-Do	Pu	SP	U	Hs	4	Y	SB	4.09	Sp	F	H	3724
	Pullman	6-3.35x4.72	100-3400	249.2	6.25	IL	4	L	In	AL	C	131.0	57.9	62.2	7.00/16	abcde	1-Do	Pu	SP	U	Hs	4	Y	SB	4.09	Sp	F	H	4445
	Hawk	4-2.95x4.33	56-3300	118.6	6.40	IL	3	L	In	AL	C	105.5	56.0	57.0	5.50/15	abce	1-Do	Pu	SP	U	Hs	4	Y	Hy	4.55	Sp	F	H	2730
Invicta	Black Prince	6-3.19x3.82	110-4200	182.9	7.20	IL	7	I	In	AL	C	120.0	55.0	56.0	6.00/16	abce	3-Up	Pu	Mc	U	Ca	If	...	Hy	4.27	tt	A	H	3920
Jaguar	Mark V—3½ Litre	6-3.23x4.33	125-4250	212.6	6.75	IL	7	I	In	AL	C	120.0	56.0	57.5	6.70/16	abcd	2-Ho	Pu	SP	U	Hs	4	Y	Hy	4.30	Sp	F	H	3690
	Mark V—2½ Litre	6-2.48x4.17	102-4600	162.5	7.30	IL	7	I	In	AL	C	120.0	56.0	57.5	6.70/16	abcd	2-Ho	Pu	SP	U	Hs	4	Y	Hy	4.55	Sp	F	H	3690
	XK120—3½ Litre	6-3.27x4.17	160-5000	210.0	7.00	IL	7	I	In	AL	C	102.0	51.0	50.0	6.00/16	abcd	2-Ho	Pu	SP	U	Hs	4	Y	Hy	3.64	Sp	F	H	2750
Jensen	Saloon	6-3.43x4.37	130-4000	243.0	6.80	IL	4	I	In	AL	C	127.5	58.0	58.0	6.50/16	ac	3-Do	Pu	SP	U	Hs	4	Y	Hy	3.70	ta	F	ϕ	3584
	Interceptor	6-3.43x4.37	130-4000	243.0	6.80	IL	4	I	In	AL	C	114.0	54.0	57.0	5.50/16	ac	1-Do	Pu	SP	U	Hs	4	Y	Hy	3.22	ta	F	ϕ	2800
Jowett	Javelin	4-2.85x3.54	50-4100	90.9	7.10	O	3	I	In	AL	C	102.0	51.0	49.0	5.25/16	abce	2-Do	Pu	SP	U	Hs	4	Y	Hy	4.87	tt	F	Mh	2200
Lagonda	2½ Litre	6-3.07x3.84	105-5000	163.5	6.50	IL	4	I	Se	AL	C	113.5	56.4	56.7	6.00/16	abc	2-Ho	Pu	SP	U	Hs	4	Y	Hy	4.56	tt	A	H	3472
Lanchester	LD10	4-2.50x4.00	40-4200	78.5	7.00	IL	3	I	In	AL	C	99.0	48.0	48.0	5.25/16	abce	1-Do	Pu	H	U	Pr	4	Y	SB	5.12	Sp	F	M	2464
Lea Francis	14	4-2.95x3.93	70-4700	108.0	7.25	IL	3	I	In	AL	Ch	111.0	51.5	52.4	5.50/17	abce	1-Ho	Pu	SP	U	Hs	4	Y	SB	4.87	Sp	F	Mh	2800
	18	4-3.35x4.33	95-4000	152.3	6.80	IL	3	I	In	AL	C	111.0	51.5	52.4	6.00/16	abce	1-Ho	Pu	SP	U	Hs	4	Y	Hy	3.90	Sp	F	Mh	3000
	18 Sports	4-3.35x4.33	100-4000	152.3	7.00	IL	3	I	In	AL	C	99.0	51.5	52.4	6.00/16	abce	2-Ho	Pu	SP	U	Hs	4	Y	SB	3.50	Sp	F	Mh	2400
M. G.	T. C. Midget	4-2.62x3.54	54-5200	76.3	7.20	IL	3	I	In	AL	C	94.0	45.0	45.0	4.50/19	abce	2-Do	Pu	SP	U	Hs	4	Y	SB	5.12	Sp	...	H	...
	1¼ Litre Saloon	4-2.62x3.54	44-4800	76.3	7.20	IL	3	I	In	AL	C	99.0	47.3	50.0	5.25/16	abce	1-Do	Pu	SP	U	Hs	4	Y	SB	5.14	Sp	F	H	...
	1¼ Litre Tourer	4-2.62x3.54	54-5200	76.3	7.20	IL	3	I	In	AL	C	99.0	47.3	50.0	5.25/16	abce	1-Do	Pu	SP	U	Hs	4	Y	SB	5.14	Sp	F	H	...
Morgan	Q	4-2.50x3.93	40-4500	77.3	7.00	IL	3	I	In	AL	C	92.0	45.0	45.0	4.50/17	abc	1-Do	Th	SP	Se	Hs	4	Y	SB	4.72	Sp	F	M	1570
Morris	Minor	4-2.24x3.54	30-4400	56.0	6.70	IL	3	L	In	AL	C	86.0	50.3	50.3	5.00/14	abce	1-Ho	Th	SP	U	Hs	4	Y	Hy	4.55	Sp	F	H	1735
	Oxford	4-2.89x3.43	41-4000	90.0	6.80	IL	3	L	In	AL	Hg	97.0	53.0	53.0	5.50/15	abce	1-Ho	Pu	SP	U	Hs	4	Y	Hy	4.55	Sp	F	H	2300
	Six	6-2.89x3.43	65-4800	135.0	7.00	IL	4	Io	In	AL	Ts	110.0	53.0	53.0	6.00/15	abce	1-Ho	Pu	SP	U	Hs	4	Y	Hy	4.10	Sp	F	H	2800
Riley	1½ Litre	4-2.72x3.94	55-4500	91.3	6.70	IL	3	I	In	AL	C	112.5	...	52.2	5.75/16	abce	1-Up	...	SP	U	Hs	4	Y	SB	4.88	Sp	F	H	2716
	2½ Litre	4-3.17x4.72	100-4500	149.0	6.80	IL	3	I	In	AL	C	119.0	...	52.5	6.00/16	abce	2-Up	...	SP	U	Hs	4	Y	SB	4.11	Sp	F	H	3136
Rolls-Royce	Silver Wraith	6-3.50x4.50	...	260.0	6.40	IL	7	Fh	In	AL	Hg	127.0	58.5	60.0	6.50/17	...	1-Do	...	SP	U	Hs	4	Y	Hy	3.72	Sp	F	ϕ	...
	Silver Dawn	6-3.50x4.50	...	260.0	...	IL	7	Fh	In	AL	Hg	127.0	56.5	60.0	...	...	...	...	...	...	...	...	...	...	...	...	F	...	...
Rover	75	6-2.57x4.13	75-4200	128.3	7.25	IL	4	Fh	In	AL	C	111.0	52.0	51.5	6.00/16	abce	2-Ho	Pu	SP	U	Hs	4	Y	SB	4.30	Sp	F	M	3106
Singer	Roadster 4A	4-2.38x3.74	36-5000	65.4	6.99	IL	3	I	In	AL	C	91.0	45.0	46.0	5.00/16	abc	1-Do	Th	SP	U	Hs	4	Y	SB	5.43	Sp	N	M	1694
	SM1500	4-2.87x3.54	50-4500	91.9	7.00	IL	3	I	In	AL	C	107.5	50.5	51.0	5.50/16	abce	1-Do	Pu	SP	U	Hs	4	Y	Hy	5.12	Sp	F	H	...
Standard	Vanguard	4-3.35x3.62	68-4200	127.6	6.70	IL	3	I	Se	AL	C	94.0	51.0	54.0	5.75/16	abcde	1-Do	Pu	SP	U	Hs	3	Y	Hy	4.62	Sp	F	H	2641
Sunbeam Talbot	90	4-2.95x4.33	64-4100	118.6	6.59	IL	3	L	In	AL	C	97.5	47.5	50.5	5.50/16	abce	1-Do	Pu	SP	U	Hs	4	Y	SB	4.30	Sp	N	H	2723
	80	4-2.48x3.74	47-4800	72.3	6.68	IL	3	I	In	AL	C	97.5	47.5	50.5	5.50/16	abce	1-Do	Pu	SP	U	Hs	4	Y	SB	5.22	Sp	N	H	2527
Triumph	2 Litre	4-3.35x3.62	68-4200	127.6	6.70	IL	3	I	Se	AL	C	108.0	51.0	54.0	5.75/16	abcde	1-Do	Pu	SP	U	Hs	3	Y	Hy	4.62	Sp	F	H	2562
	Mayflower	4-3.40x3.44	38-4200	76.1	6.70	IL	...	L	In	AL	C	84.0	45.0	48.0	5.50/15	abcde	1-Do	Pu	SP	U	Hs	3	Y	Hy	5.12	Sp	F	H	1904
Vauxhall	Wyvern	4-2.74x3.74	35-3200	86.0	6.40	IL	3	I	In	AL	C	97.7	49.1	49.6	5.00/16	abc	1-Do	Pu	SP	U	Hs	3	Y	SB	4.62	Sp	F	H	...
	Velox	6-2.74x3.94	54-3500	138.6	6.75	IL	4	I	In	AL	C	97.7	50.7	50.0	5.90/15	abc	1-Do	Pu	SP	U	Hs	3	Y	SB	4.12	Sp	F	H	...
Wolseley	4/50	4-2.89x3.43	51-4400	90.0	7.00	IL	3	Io	In	AL	Ts	102.0	53.0	53.0	5.50/15	abce	1-Ho	Pu	SP	U	Hs	4	Y	Hy	4.55	Sp	F	H	2580
	6/80	6-2.89x3.43	72-4600	135.0	7.00	IL	4	Io	In	AL	Ts	110.0	53.0	53.0	6.00/15	abce	2-Ho	Pu	SP	U	Hs	4	Y	Hy	4.10	Sp	F	H	2860

For abbreviations, see page 165

For Directory of the Manufacturers listed above, see page 63.

OTHER FOREIGN CARS

Make and Model		Engine: Number of Cylinders, Bore and Stroke (In.)	Engine: Max. Brake Hp. at Specified R.P.M.	Engine: Piston Displacement (Cu. In.)	Engine: Compression Ratio (To-1)	Engine: Cylinder Arrangement	Engine: No. of Main Bearings	Engine: Valve Location	Engine: Crankcase Type	Engine: Piston Material	Engine: Camshaft Drive	General Data: Wheelbase (In.)	General Data: Tread Front (In.)	General Data: Tread Rear (In.)	General Data: Tires (In.)	General Data: Oil Pressure to—	General Data: Carburetor—No. Used and Type	General Data: Cooling System	General Data: Clutch Type	Transmission: Location	Transmission: Type	Transmission: No. of Forward Speeds	Transmission: Synchronizing Clutches	Rear Axle: Final Drive Type	Rear Axle: Gear Ratio (to-1)	Rear Axle: Torque taken by	Independent Suspension	Service Brakes	Shipping Weight (Lb.)
CZECHOSLOVAKIAN																													
Tatra	87	8-2.95x3.31	70-3500	181.0	5.60	V	5	Io	Se	AL	C	112.1	49.2	49.2	6.50/16	abc	1-Do	Air	SP	U	Hs	4	Y	SB	3.15	ta	A	H	3015
	600	4-3.35x3.39	52-4000	119.0	6.00	O	3	I	Se	AL	Hg	106.1	51.2	51.2	6.00/16	abc	2-Do	Air	SP	U	Hs	4	Y	SB	4.09	ta	A	H	2640
FRENCH																													
Bernardet		4-2.36x2.60	25-3600	45.5	6.50	IL			In	AL					5.00/15		1-	Air		U	Hs	4	N		4.09		F	H	1230
Bugatti	•57	8-2.83x3.93	135-4500	198.7		IL	7	Io	Se	AL	Hg	130.0	53.0	53.0	5.50/18	abc	1-	Pu	SP	U	Hs	4	N	SB	4.18	ta	N	H	2200♠
Citroen	11BL	4-3.07x3.94	56-	116.0	6.20	IL	3	I	In	AL	C	114.0		54.0	6.50/16	abc	1-	Pu	SP	U	Hs	3	N	SB		ra	A	H	2281
	15S	6-3.07x3.94	77-	174.8	6.20	IL	5	I	In	AL	C	119.0		58.0	6.50/16	abc	1-	Pu	SP	U	Hs	3	N	SB		ra	A	H	2794
		2-2.44x2.44	9-	22.9		O	2	I	Se	AL	C	92.1	49.8	49.8	5.00/16	abc	1-Do	Air	SP	U	Hs	4	Y	SB	3.83	ta	F	H	1095
Claveau		8-2.59x3.30	90-4000	140.0	7.00	V	5	I	In	AL	C	118.0		55.0	5.50/17	abce	1-	Pu	SP	U	Hs	5	Y	Hy	4.00	ta	A	H	2046♠
Delage	D6	6-3.27x3.55	95-	183.0	6.50	IL	7	I	In	AL	C	124.0		57.0	5.50/17	abcd	1-	Pu	SP	U	E	4	Y	SB		Sp	F	H	2061♠
Delahaye	134N	4-3.15x4.10	55-	131.0		IL	5	I	In	AL	C	116.0		57.0	6.00/17	abcd	1-	Pu	SP	U	E	4	Y	SB		Sp	F	H	1716♠
	135M	6-3.30x4.10	130-	216.0		IL	7	I	In	AL	C	116.0		58.0	6.00/17	abcd	1-	Pu	SP	U	E	4	Y	SB		Sp	F	H	2067♠
	175	6-3.70x4.10	125-	274.0		IL	7	I	In	AL	C	116.0		58.0	6.00/18	abcd	1-	Pu	SP	U	E	4	Y	SB		Sp	F	H	2167♠
Ford	Vedette	8-2.50x3.10	65-4000	131.6	7.00	V	4	L	In	Als	Hg	106.0		54.0	6.50/16	abc	1-	Th	SP	U	Hs	3	Y	SB	4.22	Sp	F	H	1570♠
Gregoire	R	4-3.38x3.38	64-4000	122.0	6.50	O	3	I	In	AL	C	96.4		56.6	5.50/16	abcd	2-	Pu	SP	U	Hs	4	Y	SB	3.20	ta	A	H	2080
Hotchkiss	684	4-3.38x3.93	70-4000	140.0	6.00	IL	3	I	In	AL	C	115.0		56.6	6.40/16	abc	1-Do	Pu	SP	U	Hs	4	Y	SB	4.30	Sp	F	H	1760♠
	686	6-3.38x3.93	105-4000	212.0	6.50	IL	7	I	In	AL	C	121.6		56.2	6.40/16	abce	1-Do	Pu	SP	U	Hs	4	Y	SB	3.80	Sp	F	H	1980♠
Julien	MM5	1-3.07x2.67	10-4400	19.8	5.40	IL	2	I	Se	AL	Hg	72.0		32.8	4.00/12	abc	1-	Air	SP	U	Hs	3	Y	SB	6.00	Sc	F	M	704♠
Mathis	M6	6-3.50x3.00	80-4000	174.0	6.50	O	4	L	In	AL	C	104.0		52.0	5.50/15	abc	2-	Pu	SP	U	Hs	6	Y	Hy	4.10	ta	A	H	2180♠
Panhard	Dyna	2-2.83x2.95	24-4000	37.2	6.00	O	2	I	Se	AL	C	83.0		48.0	5.25/16	abc	2-	Air	SP	U	Hs	4	Y	SB		ta	A	M	1212
Peugeot	202	4-2.67x3.07	32-4000	69.1	6.80	IL	3	I	In	AL	C	96.4		47.0	5.50/16	abce	1-	Pu	SP	U	Hs	3	Y	Wo	5.20	tt	F	H	835♠
	203	4-2.95x2.87	40-4500	78.7	6.80	IL	3	I	In	AL	C	101.5		51.8	6.00/16	abce	1-	Pu	SP	U	Hs	4	Y	Wo	5.70	tt	F	φ	2046
Renault	4N	4-2.16x2.36	19-4000	29.8	6.70	IL	3	I	In	AL	C	83.0		47.0	5.25/16	abc	1-	Pu	SP	U	Hs	3	Y	SB		ta	A	H	1234♠
	Juva	4-2.28x3.74	24-3500	39.4	6.50	IL	3	I	In	AL	C	92.0		45.0	5.50/15	abc	1-	Pu	SP	U	Hs	3	N	SB		tt	F	H	1675♠
Rosengart	ST8	8-3.15x3.74	95-3600	299.0	6.20	V	3	L	In	Als	Hg	122.0		59.0	7.50/16	abce	1-Do	Pu	SP	U	Hs	3	Y	SB	3.50	ta	A	H	1980♠
Rovin	D2	2-2.63x2.36	10-3000	25.7	6.30	O	2	L	Se	AL	C	67.0		35.4	2.70/90	abc	1-	Th	SP	U	Hs	3	N	Hy	2.77	Sp	A	M	770
Simca	600	4-2.04x2.63	17-3600	34.7	6.50	IL	2	I	In	AL	C	78.7		41.0	4.25/15	abce	1-	Th	SP	U	Hs	4	Y	SB	4.80	Sp	F	H	1188
	508	4-2.67x2.95	34-4000	66.4	6.00	IL	3	I	In	AL	C	95.2		48.0	5.25/15	abce	1-	Pu	SP	U	Hs	4	Y	SB	4.60	Sp	F	H	1870
Talbot	T26	6-3.66x4.33	170-4200	273.5	7.00	IL	7	I	In	AL	C	125.0		58.0	6.00/18	abcde	2-	Pu	SP	Se	Pr	4	N	SB	3.58	Sp	F	H	2530♠
	T15	4-3.66x3.89	95-4200	164.0	7.00	IL	5	I	In	AL	C	116.0		56.0	6.00/18	abcde	1-	Pu	SP	U	Hs	4	Y	SB	3.92	Sp	F	H	1980♠
Wimille		8-2.59x3.10	65-4000	131.6	7.00	V	4	I	In	Als	Hg	106.0		54.0	5.50/15	abc	1-	Th	SP	U	E	4	Y	IG	3.00	ta	A	H	1320♠
GERMAN																													
BMW	340	6-2.60x3.78	55-3750	120.0	6.00	IL	4	I	In	AL▼	C	113.0	51.2	55.1	5.50/16	abcde	1-Do	Pu	SP	U	Hs	4	Y	Hy	4.55	ta	F	H	1715♠
Ford	Taunus	4-2.50x3.64	34-4200	71.5	6.60	IL	3	L	In	AL	Hg	94.0	48.7	48.0	5.25/16	abc	1-Do	Th	SP	U	Hs	3	Y	SB	4.87	tt	N	H	1380♠
Mercedes-Benz	170V	4-2.90x3.94	38-3700	103.2	6.00	IL	3	L	In	AL	Hg	112.0	51.6	51.0	5.50/16	abc	1-Do	Pu	SP	U	Hs	4	Y	SB	4.12	tt	A	H	1671♠
	170S	4-2.96x3.94	52-4000	107.7	6.50	IL	3	L	In	AL	Hg	112.0	51.8	56.0	6.40/15	abce	1-Do	Pu	SP	U	Hs	4	Y	SB	4.37	tt	R	H	1780♠
	Diesel	4-2.89x3.94	38-3200	103.5	19.00	IL	3	L	In	AL	Hg	112.0	51.8	52.8	5.50/16	abce	N	Pu	SP	U	Hs	4	Y	SB	4.12	tt	R	H	1804♠
Opel	Olympia	4-3.15x2.92	39-3700	90.8	6.00	IL	4	I	In	Als	Hg	95.0		49.2	5.00/16	abcde	1-		SP	U	Hs	4	Y	SB	4.56	Sp	F	H	1980
	Kapitan	6-3.15x3.23	55-3500	151.0	6.00	IL	4	I	In	Als	Hg	106.0		52.2	5.50/16	abcde	1-		SP	U	Hs	4	Y	SB	4.30	Sp	F	H	2060
Veritas		6-2.95x2.95	100-5000	121.0	7.70	IL	7	I	In	AL	C	88.6	50.5	51.2	5.25/	abce	3-Do	Pu	SP	U	Hs	5	Y	SB	4.45	ta	F	H	
Volkswagen	VW10	4-2.95x2.52	24-3300	69.0	5.80	O	4	I	Se	AL	B	94.5	50.8	49.2	5.00/16	abc	1-Do	Air	SP	U	Hs	4	N	SB	4.43	ta	A	M	1530
ITALIAN																													
Alfa Romeo	6C2500S	6-2.83x3.93	93-4600	149.0	7.30	IL	7	I	In	AL	C	118.1	57.1	57.9	6.50/17	abc	1-Do	Pu	SP	U	Hs	4	Y	SB	4.38	Sp	A	H	
Cisitalia	202	4-2.68x2.95	55-5500	67.1	7.50	IL	3	I	Se	AL	B	94.5	49.6	49.6	5.50/15	abcde	1-Do	Pu	SP	Se	Hs	4	Y	SB	4.10	tt	F	H	1080♠
	203	4-2.83x2.95		73.2		IL	3	I	Se	AL	B	79.0	46.0	44.4	5.00/15	abcde	2-Do	Pu	SP	Se	Hs	4	Y	SB		tt	F	H	728♠
Ferrari	166 Inter	12-2.36x2.31	105-6000	122.0	7.00	IL	7	I	In	AL	C	98.5	50.0	49.2	5.75/16	abcde	1-Up	Pu	SP	U	Hs	5	Y	SB	4.66		F	H	
Fiat	500C	4-2.05x2.64	16-4400	34.8	6.45	IL	2	I	In	AL	C	78.7	43.9	42.6	4.25/15	abce	1-Do	Th	SP	U	Hs	4	Y	SB	4.87	Sp	F	H	748♠
	1100E	4-2.68x2.95	35-4400	66.5	6.10	IL	3	I	Se	AL	C	95.2	48.5	48.3	5.00/15	abce	1-Do	Th	SP	U	Hs	4	Y	SB	4.66	Sp	F	H	1035♠
Isotta Fraschini	8C	8-3.07x3.07	120-4800	181.8	7.00	V	5	I	In	AL	C	122.0	57.1	57.1	7.00/16	abc	1-Dd	Pu	SP	U	Hs	4	Y	SB	3.94		A	H	3197♠
Lancia	100B	4-2.56x2.68	30-4600	55.1	6.70	V	3	I	In	AL	C	94.5	46.2	46.5	5.00/15	abce	1-Do	Pu	SP	U	Hs	‡	N	DR	5.30	Sp	F	H	1719
Maserati	▲Corsa	4-3.07x2.76	260-7000	91.5		IL		I		Als		98.5	47.3	49.2	(aa)		1-					4	Y						
	▲Sport	6-2.84x3.15	130-6000	120.0		IL		I		Als		91.0	47.6	45.3	5.50/16		1-	Pu				4	Y						
	▲Turismo	4-2.60x2.86	65-5000	90.7		IL		I		Als		100.1	50.2	49.4	5.50/16		1-			Se		4	Y						

ABBREVIATIONS

‡—Four forward speeds plus overdrive.
▲—Supercharged.
▼—Three forward speeds plus overdrive.
♠♠—Hand shift standard, preselective optional.
φ—Hydraulic front, and mechanical rear.
♠—Chassis weight.
•—Model 401—85 hp @ 4500 RPM.
a—Main bearings.
b—Camshaft.
c—Connecting rod bearings.
d—Piston pins.
e—Chain or timing gears.
(aa)—Front, 5.00/17; rear, 6.00/16.
A—All four wheels.
AL—Aluminum Alloy.
Als—Aluminum Alloy with steel struts.
B—Straight Bevel gear.
C—Chain.
Ca—Completely automatic, turbo-transmitter.
Ch—Chain and Helical Gear.
Dd—Dual downdraft.
Do—Downdraft.
DP—Double plate.
DR—Double reduction.
E—Electric shift.
F—Front wheels.
Fh—Valves in head and side (F-Head)
H—Hydraulic.
Hc—Hand shift standard. Total electro-magnetically operated gear box optional.
Hg—Helical gears.
Hm—Hydro-mechanical.
Ho—Horizontal.
Hs—Hand shift.
Hy—Hypoid.
I—In head (valves).
If—Infinite.
IG—Internal gear.
IL—In line (cylinders).
In—Integral with cylinders.
Io—In head with overhead camshaft.
L—At side (L-head).
M—Mechanical.
Mc—Magnetic.
Mh—Mechanical and hydraulic.
N—No or none.
O—Horizontally opposed (cylinders).
Pr—Preselective.
Pu—Pump.
R—Rear.
ra—Radius arms.
Sa—Springs and torque arm.
SB—Spiral bevel.
Sc—Shackles.
Se—Separate.
Sp—Springs.
SP—Single plate, dry.
ta—Torque arm.
Th—Thermo-syphon.
Tp—Thermo-syphon or pump.
Ts—Twin skew gear with vertical shaft
tt—Torque tube.
U—Unit with engine.
Up—Updraft.
V—"Vee" type.
Wo—Worm drive.
Y—Yes.

For Directory of the Manufacturers listed above, see page 63.

BRITISH COMMERCIAL

Line Number	Make and Model	Type	Number of Crew	Number of Passengers Seated	Fuel: Capacity (Gal.)	Fuel: Octane Recommended	Oil Capacity (Gal.)	Engine: Make and Model	Engine: Number Used	Total Take-off Hp. at Specified R.P.M.	Propellers: Make	Propellers: Type	Propellers: Diameter (Ft. and In.)	Propellers: Number of Blades	Dimensions: Span	Dimensions: Overall Length	Dimensions: Height (Taxi Position)	Dimensions: Wing Area (Gross) Sq. Ft.	Dimensions: Aileron Area (Sq. Ft.)
1	Airspeed ... AS-Consul Convertible	PC-L	2	5	156♠	87	15♠	A-S ... Cheetah X	2	790-2450	FR	Fxd	8' 0"	2	53' 4"	35' 4"	11' 1"	348	12.6
2	... AS65-Consul Ambulance	PL	2	4	156♠	87	15♠	A-S ... Cheetah X	2	790-2450	FR	Fxd	8' 0"	2	53' 4"	35' 4"	11' 1"	348	12.6
3	... AS65-Consul	PL	2	5-6	156♠	87	15♠	A-S ... Cheetah X	2	820-2300	FR	Fxd	8' 0"	2	53' 4"	35' 4"	11' 1"	348	12.6
4	... AS-57-Ambassador	PL	5	28-44	1000♠	115/145	28♠	Bristol ... Centaurus	2	5200-2700	DH	Cs-Fr	16' 0"	4	115' 0"	81' 4"	18' 10"	1200	89.8
5	Armstrong-Whitworth ... AW-55	PC-L	4	26-31	974♠	...	3.6	A-S ... Mamba	4	4560-15000‡	DH	Cs-Fr	10' 0"	3	92' 0"	71' 11½"	26' 0"	986	64.5
6	Auster ... Arrow-J2	PL	1	1	15♠	73	1♠	Cont. ... C75	1	75-2275	AC	Fxd	6' 0"	2	36' 0"	22' 9"	6' 6"	185	18.0
7	... Autocrat-J1	PL	1	2	15♠	73	2♠	BN ... Cirrus Minor	1	90-2200	AC-FR	Fxd	6' 0"	2	36' 0"	23' 5"	6' 6"	185	18.0
8	... J5B	PC-L	1	3	34♠	73	3♠	DH ... Gypsy Major I	1	130-2200	FR	Fxd	6' 9"	2	36' 0"	23' 4"	6' 6"	185	18.0
9	... Avis-P	PC-L	1	3	34♠	80	3♠	DH ... Gypsy Major-X145	1	135-2200	AC	Fxd	6' 10"	2	36' 4"	23' 6"	6' 5½"	185	18.0
10	Bristol ... 171MK3	PC-L†	1	3-4	60♠	...	4♠	Al ... Leonides 28HM	1	550-3200	B-HR	...	●●	3	48' 6.7"	48' 8½"	13' 10"	...	...
11	... 170MK21E	PC-L	4	32	900♠	100/130	39	Bristol ... Hercules 672	2	3380-2800	DH	Cst	14' 0"	4	108' 0"	68' 4"	21' 6"	1487	39.2
12	... Brabazon MK1	PL	12	94	ΔΔ	100/130	516♠	Bristol ... Centaurus	8	19760-2700	Rot	CC	16' 0"	3	230' 0"	177' 0"	50' 0"	5317	185.0
13	Chrislea Super Ace-CH3 Series 4	PL	1	3	38♠	80	4 3/4♠	DH ... Gipsy Major 10	1	145-2400	AC	Fxd	(n)	2	36' 0"	21' 10"	7' 4"	177	13.7
14	De Havilland ... Dove-DH104	PL-S	2	8-11	168♠	100	12	DH ... Gipsy Queen	2	690-2800	DH	Cs-Fr	...	3	57' 0"	39' 4"	...	335	22
15	... Comet 106	PL	4	36	...	AK	...	DH ... Ghost 3	4	Δ	None	...	...	...	115' 0"	93' 0"	27' 10"	2015	...
16	Handley Page ... Hermes IV	PL	7	40-74	3802	115	183	Bristol ... Her. 763	4	8080-2900	DH	Cs-Fr	13' 0"	4	113' 0"	96' 10"	29' 11"	1408	98.0
17	... Hermes V	PL	7	40-74	4230	...	41	Bristol ... Theseus	4	10160-8200	DH	Cs-Fr	13' 0"	4	113' 0"	96' 10"	29' 11"	1408	98.0
18	... M60-MKI	PL	2	14-22	336	100	29	DH ... Gipsy Queen 70	4	1380-2800	DH	Cs-R	7' 6"	3	65' 0"	52' 1"	13' 9"	498	31.5
19	... M60-MK2	PC-L	2	14-22	499	AK	10	A-S ... Mamba	2	2256-14500	DH	Cs-R	7' 6"	3	65' 0"	52' 1"	13' 9"	498	31.5
20	Percival ... P50	PC-L	2	8-12	106♠	100/130	6♠	Al ... Leonides 501/4	2	1040- ...	DH	Cs-Fr	9' 0"	3	56' 0"	42' 10"	16' 1"	365	25.1
21	... P54	A	4	...	226♠	100/130	7 1/2♠	Al ... Leonides 501/4	2	1040- ...	DH	Cs-Fr	9' 0"	3	56' 0"	42' 10"	16' 1"	365	25.1
22	Saunders-Roe ... SR-45	PS	...	100+	...	AK	...	Bristol ... Proteus	10	35000	DH	CC	16' 6"	...	219' 6"	148' 0"	...	5100	...
23	Scottish Aviation Prest. Pioneer 3	PC-L	1	4	57♠	87	7♠	Al ... Leonides 4M	1	520-3000	Rot	Cst	9' 0"	3	52' 9"	34' 7"	10' 1"	411	36.7
24	... Pioneer SAA2-MKII	PL	1	4	57♠	87	7♠	A-S ... Cheetah 25	1	475-2700	Rot	Cst	8' 3"	2	52' 9"	34' 7"	10' 1"	410	36.7
25	... Pioneer SAA2-MKIII	PL	1	4	57♠	87	7♠	Alvis ... Leonides	1	520-3000	Rot	Cst	9' 0"	3	52' 9"	34' 7"	10' 1"	410	36.7
26	Short ... Sealand SSI	PL-S	2	5-7	120	...	7	DH ... Gipsy Queen 70	2	630-2800	DH	Cs-Fr	7' 6"	3	59' 0"	42' 7"	14' 0"	353	19.1
27	... Solent 4	PC-S	6.7	45	3050	100/120	152	Bristol ... Hercules 733	4	8160-2800	DH	Cs-Fr	12' 9"	4	112' 10"	89' 8"	37' 3"	1687	...
28	Vickers-Armstrongs ... Valetta Ftr.	PC-L	4	36	840♠	100	31	Bristol ... Herc. 730	2	1975-2800	Rot	Cst	13' 3"	4	89' 3"	65' 2"	19' 0"	882	26.8♦
29	... Viscount 700	PL	3-4	40-53	1800♠	AK	5♠	RR ... Dart 3	4	5600-14500●	Rot	Cs-Fr	10' 0"	4	94' 0"	81' 2"	26' 9"	963	71.8

ABBREVIATIONS

♦—Each.
♠—Imperial gallons.
*—With flaps down.
†—Includes 4 passengers and full luggage.
●●—Main rotor 48' 6.7"—tail rotor 9' 7.7".
Δ—Disk loading.
ΔΔ—13500 Imperial gallons.
‡—Includes 5 passengers and full luggage.
●—Includes 6 passengers and full luggage.
‡—Shaft hp, plus 320-lbs jet thrust per engine.
§—Gallons instead of pounds.
?—36 gal. long range.
(d)—Dual.
(n)—Dia. 6' 6" or 6' 9".
Al—Alvis.
BN—Blackburn.
AK—Aviation kerosene.
AC—Airscrew Co., Ltd.
Cont—Continental Motors.
Cst—Constant speed.
Cs-Fr—Constant speed, full feathering and reversing.
CC—Constant speed-contra-rotating.
B-HR—BAC and Horden Richmond.
Cs-R—Constant speed, reversible.
DH—DeHavilland.
Ele—Electric.
FR—Fairey Reed propeller.
Fxd—Fixed.
GCA—Girling cable operated.

FRENCH AIRCRAFT ENGINES—

COMPANY ➤	ARSENAL		FRENCH NATIONAL AERO FACTORY							HISPANO-SUIZA
Model	12-H-00	24-H-00	4J00	4L00	12S02	14N68.69	14R200	14R81	14V	12B-01
Cylinder Arrangement	V-60	Opposed	In-Line	In-Line	V	Radial	Radial	Radial	Radial	V-60
Cooling Medium	Liquid	Liquid	...	...	...	Air	Air	Air	Air	Liquid
Number of Cyl.	12	24	4	4	12	14	14	14	14	12
Bore and Stroke (In.)	5.90x6.50	5.90x6.50	...	...	...	...	...	...	...	5.90x6.60
Total Displacement (Cu. In.)	2132.0	4265.0	178.1	386.0	731.0	2360.0	2360.0	2360.0	2895.0	2164.0
Compression Ratio : 1	6.50	6.50	...	...	...	...	...	...	...	6.85
B.M.E.P. at Max Hp	257.0	248.0	124.1	121.5	147.0	138.0	168.1	182.2	196.0	237.0
Max Hp @ RPM (not take-off)	1700-3000	3200-3000	67-2400	135-2280	440-3250	900-2220	1200-2400	1300-2400	1600-2400	1750-2700
Take-off Hp @ RPM	2250-3250	4000-3000	76-2500	147-2340	575-3300	1120-2400	1600-2600	1850-2600	2200-2600	2200-2700
Cruising Hp @ RPM	1320-2700	2640-2700	60-2310	106-2100	295-2800	450-1950	680-1950	750-1950	1180-2000	1100-2250
Blower Ratio : 1	6.86-9.38	6.86-9.38	None	None	9.35	6.40	6.43-9.01	7.38-9.01	7.51-9.02	...
Propeller Drive Ratio : 1	.416	.416	1.000	1.000	.570	.666	.562	.562-.448	.448	...
Weight (Lb.)	2100	4190	231	341	880	1540	1681	...	2760	2006
Length (In.)	98.00	119.00	46.50	53.75	72.00	69.80	82.28	79.50	93.50	88.00
Width (In.)	30.60	47.20	17.15	19.40	28.80	...	...	...	...	32.00
Height (In.)	45.40	59.00	22.45	30.00	39.20	50.75	51.00	51.00	56.12	42.00

For Directory of the Manufacturers listed above, see page 63.

AND PRIVATE AIRCRAFT

WEIGHTS (Lb.)							PERFORMANCE									MAIN LANDING GEAR							
																		Auxiliary Gear					
Empty	Gross	Gross Landing	Pay Load	Useful Load	Wing Loading (Lb. per Sq. Ft.)	Power Loading (Lb. per Hp.)	Maximum Speed at Altitude	Cruising Speed at Altitude	Fuel Consumption at Cruising Speed (Lb. per Hr.)	Range in Miles at Cruising Speed	Stalling Speed at Sea Level (m.p.h.)	Initial Climb (Ft. per Min.)	Service Ceiling with Normal Load (Ft.)	Take-off Distance (Over 50 ft. obstacle no wind) (Ft.)	Landing Distance (Over 50 ft. obstacle no wind) (Ft.)	Retractable	Method of Retraction	Tail or Nose Wheel	Retractable	Type	Tread (Ft., In.)	Brake Type	Line Number
6150	8250	8250	1250‡	2470	23.7	10	190-4800	145-10000	88	920	69*	1180	18700	1440	825	Y	Hyd	Tail	Y	Swi	15' 6"	Pne	1
6400	8250	8250	940†	2470	23.7	10	190-4800	145-10000	88	920	69*	1180	18700	1440	825	Y	Hyd	Tail	N	Swi	15' 6"	Pne	2
6050	8250	8250	1420●	2550	23.7	10	190-4800	145-10000	88	920	69*	1180	18700	1440	825	Y	Hyd	Tail	N	Swi	15' 6"	Pne	3
34543	52500	50000	11135	17060	43.3	9.6		240-20000	886	1150	86*	1450	35000	3900	2550	Y	Hyd	Nose	Y	St-L	27' 6"	Disc	4
29750	44800	39500	7500	16190	45.6	8.74	320-25000	276-25000	1370	1400	88*	1500	29600	3300	3300	Y	Hyd	Nose(d)	Y	Ste	17' 0"	Hyd	5
872	1450	1450	244	244	7.8	19.3	98-SL	87-SL	4§	320	37	430	10000	1350	1350	N		Tail	N	Swi	6' 0"	GCA	6
1052	1850	1850	438	438	10.0	18.5	120-SL	100-SL	4½§	320*	28	568	14000	1350	1350	N		Tail	N	Swi	6' 0"	GCA	7
1305	2400	2400	667	667	13.0	17.0	115-1000	103-1000	6¼§	500	32	620	13500	1400	1300	N		Tail	N	Ste	6' 0"	GCA	8
1480	2550	2550	780	780	13.8	17.6	120-SL	100-SL	6.4§	500	36	500	12000	1392	1200	N		Tail	N	SS	6' 0"	GCA	9
3732	5200		850	1470	2.80▲	9.45	128-SL	100-SL	126	330		1280	20000			N		Nose	N	Swi		Mec	10
26520	40000	40000	4819	13480	26.9	11.83	224-6500	162-5000	730	1420	90	1090	21100	2310	2310	N		Tail	N	Swi-L			11
168650	290000	240000	16771	121350	54.6	14.7	320-25000	250-25000	4990	5000	114	570	25000	6900		Y	HE	Nose	Y	SSL		Pne	12
1480	2500	2500	705	1020	14.1	16.1	130-SL	112-2000	57.5	530	50	790	16500	750	650	N		Tail	N	Swi		Hyd	13
5657	8500	8500	1185	2613	25.4	12.3	210-8000	179-8000	194	1135	72	850	20000	2370	2250	Y	Pne	Nose	Y	Swi	13' 9"	Pne	14
	100000		11000					500-40000	4470							Y	Hyd	Nose	Y	Ste	28' 5½"	Hyd	15
55137	82000	75000	17000	26863	58.2	10.3	357-20000	300-25000	2118	3310	105*	838	24900	4200	3480	Y	Hyd	Nose	Y	Ste		Pne	16
51376	86000	75000	17100	34624	61.1	8.45	346-15000	333-30000	3085	3050	107	1940	28600	4608	3480	Y	Hyd	Nose	Y	Ste		Pne	17
11942	18000	18000	6060	6060	36.1	13.0	232-6750	157-10000	396	800	77	683	18400	2522	2340	Y	Pne	Nose	Y	Ste		Pne	18
10582	18000	18000	7420	7420	36.1	8.0	290-20000	175-10000	595	980	77	1840	34100	2550	1860	Y	Pne	Nose	Y	Ste		Pne	19
7360	10650	10650			29.2	10.2	225-5000	212-10000	62§	362	74	1115	23400	2430	2250	Y	Pne	Nose	Y	Swi		Pne	20
8004	11000	11000			30.1	10.6		212-10000	62§	1100			23400			Y	Pne	Nose	Y	Swi		Pne	21
	315000				62.0	9.0		380-35000		5600						Y							22
3655	5015	5015	950	1360	12.2	9.6	173-4250	120-5000	101	480	35	1100	25500	480	675	N		Tail	N	Swi		Hyd	23
3655	5015	5015	950	1360	12.6	10.8	160-4000	140-7000	117	425	35	1000	20000	540	675	N		Tail	N	Swi		Hyd	24
3655	5015	5015	950	1360	12.6	9.9	173-4250	155-11750	147	425	35	1100	25500	480	675	N		Tail	N	Swi		Hyd	25
7319	9100	9100	1400	1781	25.8	13.2	188-5250	173-7750	129.5	690	78	840	20000	2310	2790	Y	Pne	Tail	Y	Fxd		Pne	26
49020	79000	79000	17000	29980	46.8	9.7	276-3000	200-10000	1725	3000	108	1120	18000	°4200									27
23785	38500	35500	11000	12715	41.4	9.13	294-5000	235-10000	891	1650	83	1300	22200	3150	2775	Y	Hyd	Tail	Y	Swi		Pne	28
30500	50000	47500	13845	19500	51.9	8.95	356-15000	320-25000	1944	2380	82	1750	30000	3600	2808	Y	Ele	Nose	Y	Ste		Pne	29

Hyd—Hydraulic.
HE—Hydraulic electric.
Mec—Mechanical.
N—No or none.
PCL-L—Passenger or cargo, land plane.
PL—Passenger land plane.
PL-S—Passenger land or seaplane.
Pne—Pneumatic.
PS—Passenger seaplane.
PC-S—Passenger, cargo, seaplane.
RR—Rolls-Royce.
Rot—Rotol.
SS—Swivel, steering.
Ste—Steering.
St-L—Steering, lockable.
Swi—Swivel.
Sw-L—Swivel, lockable.
SSL—Swivel, steering, lockable.
SL—Sea level.
Y—Yes.
*—With aux. gas tanks—600 miles.
▲—20000 lb. static thrust at 10000 RPM.
‡—Helicopter.
°—Take-off from water.
●—Shaft hp. plus 357 lbs. jet thrust per engine.
AS—Armstrong Siddeley.
A—Aerial survey aircraft.

Reciprocating Type

COMPANY ➤	MATHIS				POTEZ					
Model	8-G3-22	4-GB-62	2-GB-60	8-GX-60	4D01	4D31	6D00	8D30	8D40	12D30
Cylinder Arrangement	V	Opposed	Opposed	Opposed	In-Line	In-Line	In-Line	V-90	V-90	Opposed
Cooling Medium	Air	Air	Air	Air	Air	Air	Air	Air	Air	Air
Number of Cyl.	8	4	2	8	4	4	6	8	8	12
Bore and Stroke (In.)	4.12x3.94	4.12x3.94	4.12x3.94	4.12x3.94	4.92x4.72	4.92x4.72	4.92x4.72	4.92x4.72	4.92x4.72	4.92x4.72
Total Displacement (Cu. In.)	424.0	212.0	106.0	424.0	357.0	357.0	536.0	714.0	714.0	1072.0
Compression Ratio : 1	7.00	6.60	6.60	7.00	7.00	7.00	7.00	7.00	7.00	7.00
B.M.E.P. at Max Hp.	122.6	122.6	122.0	128.1	139.0	185.0	139.0	176.0	200.0	169.0
Max Hp @ RPM (not take-off)	215-3280	85-2500	42-2580	220-3200	155-2500	200-2500	230-2500	400-2700	450-2800	560-2700
Take-off Hp @ RPM	230-3350	92-2650	46-2850	230-3350	160-2520	220-2800	240-2520	450-2800	550-3000	650-2800
Cruising Hp @ RPM	175-3050	62-2400	35-2440	175-3050	124-2320	160-2320	186-2320	320-2600	380-2600	510-2500
Blower Ratio : 1					None	13.5	None	8.7	8.7	7.4
Propeller Drive Ratio : 1	.634	1.000	1.000	1.000	1.000	1.000	1.000	.657	.657	.657
Weight (Lb.)	450	250	130	540	310	363	457	735	748	968
Length (In.)	54.38	34.12	27.38	44.12	48.80	46.80	62.10	67.80	67.80	75.75
Width (In.)	27.62	32.62	32.62	37.00	19.80	20.80	19.80	31.80	33.80	38.40
Height (In.)	27.50	26.62	11.50	21.88	26.00	26.40	26.00	31.25	31.25	31.80

For Directory of the Manufacturers listed above, see page 63.

FOREIGN DIESEL AND

Line Number	Engine Make and Model	Built under License from	GENERAL: Designed for	Type	Number of Cylinders Bore and Stroke (In.)	Cylinder Liners—Type	Cycle	Piston Displacement (Cu. In.)	With Bare Engine: Max. Brake Hp. at Specified R.P.M.	With Standard Accessories: Max. Intermittent Hp. at Specified R.P.M.	With Standard Accessories: Continuous Sustained Hp. at Specified R.P.M.	Compression Ratio—to 1	Max. Combustion Pressure (Lb. per Sq. In.)	B.M.E.P. at Continuous Hp. (Lb. per Sq. In.)	Weight per Continuous Hp. (Lb.)	Max. Torque in Lb. Ft. at Specified R.P.M.	Shipping Weight (Lb.): Automotive or Industrial	Shipping Weight (Lb.): Marine
	BRITISH																	
1	A.E.C. A209-A210	......	M	TC	6-4.72x5.59	D	4	587.9	125-1800	110-1500	100-1500	16.00	900	91.5	31.0	380-1200	......	3100
2	.... A212	......	M	TC	6-4.72x5.59	D	4	587.9	125-1800	110-1500	100-1500	16.00	900	91.5	27.0	380-1200	......	2700
3	.... A173	......	T,B,Tr,R	DI	6-4.13x5.74	D	4	483.0	103-1800	103-1800	95-1800	16.00	1000	108	15.8	330-1150	1500	......
4	.... A218	......	T,B,Tr,R	DI	6-4.72x5.59	D	4	587.9	129-1800	129-1800	125-1800	16.00	1000	110	13.4	430-1000	1670	......
5	.... A211	......	I	TC	6-4.72x5.59	D	4	587.9	125-1500	110-1500	100-1500	16.00	900	91.5	......	360-1200	......	......
6	....	......	T,B	DI	6-5.12x5.59	D	4	690.0	162-1800	......	150-1800	16.00	......	111.0	11.3	505-1100	1700	......
7	Bristol .... AVW	......	B	DI	6-4.33x5.62	D	4	496.0	100-1700	......	......	16.00	......	98.5	......	320-1200	......	......
8	Coventry ..... Godiva-CDB	......	M	AC	4-3.25x4.13	D	4	137.1		30-2000	30-2000	17.50	900	86.5	47.1	67-1700	......	1415
9	.... Godiva-CD4	......	T,Tr	AC	4-3.25x4.13	D	4	137.1	......	45-2600	40-2400	17.50	900	104	13.7	90-2400	550	......
10	.... CD1	......	I	AC	1-3.25x4.13	D	4	34.26	6.50-1500	6.00-1500	5.50-1500	17.50	900	87.0	......	22¾-1500	......	......
11	.... CD2	......	M,I	AC	2-3.25x4.13	D	4	68.5	13-1500	16.5-2000	15-2000	17.50	900	86.5	40.0	41-1500	800	800
12	Coventry Victor AD1	......	M,I	......	1-3.15x3.94	N	4	30.7	......	......	4.0-1500	......	905	85.0	58.8		235	......
13	.... WD1	......	General	......	1-3.16x3.94	D	4	31.0	......	7.0-2250	5.0-1500	......	860	87.0	49.2	21.8-1500	246	......
14	.... WD2	......	General	......	1-3.60x3.94	D	4	36.0	......	9.0-2250	7.0-1800	......	890	102.0	38.0	29.0-1500	266	......
15	Crossley ..... HOE-Type 7	......	B	DI	6-4.50x5.50	D	4	525.0	......	100-1700	82-1200	15.70	900	101	17.3	300-1000	1456	......
16	.... HOE-Type 7/5	......	B	DI	6-4.50x5.50	D	4	525.0	......	115-1700	85-1200	15.70	950	107	17.3	375-1000	1456	......
17	Daimler CD6-MKIV	Own	T,B	DI	6-4.50x5.50	D	4	524.8	......	100-1600	......	15.00	1140	100	......	350-1200	1720	......
18	.... CD650	Own	B,T	DI	6-6x5½	D	4	648.0	125-1650	120-1600	100-1500	15.00	1150	100	20.0	450-820	2000	......
19	Dennis O4	Own	T,B,Tr	DI	4-4.62x5.90	W	4	396.8	80-1800	77-1800	64-1600	14.00	1000	79.8	23.6	262-1000	1512	......
20	.... O6	Own	T,B,Tr	DI	6-4.13x5.74	W	4	462.9	100-1800	97-1800	80-1600	15.00	1000	85.5	21.0	325-1100	1687	......
21	.... 5 Litre	Own	T,B,Tr	DI	6-3.86x4.41	W	4	309.0	75-2000	72-2000	60-1800	16.00	1000	85.4	17.2	220-1000	1030	......
22	Foden FD6	AW	Var	DI	6-3.35x4.73	W	2	250.0	......	126-2000	75-1500	14.00	1500	80	16.0	350-1600	1200	1700*
23	Gardner 4LK	Own	T,B	GA	4-3¾x5¼	D	4	232.0	57-2100	57-2100	......	13.50	......	104	......	161-1100	684	......
24	.... *4LW	Own	T,R,I,M,B	GA	4-4¼x6	D	4	340.0	68-1700	68-1700	48-1200	13.00	......	102	24.0	230-1000	1150	......
25	.... ^4L3	Own	R,I,M	GA	4-5½x7¾	†	4	736.0	102-1200	102-1200	66-800	12.00	......	100	45.4	488-700	3080	......
26	Leyland O-300	......	T,B,Tr,M,I	DI	6-3.80x4.50	D	4	306.0	75-2000	65-1650	55-1750	16.00	1000	100	18.3	210-1100	1008	2000*
27	 L	......	T,B,Tr,M,I	DI	6-4.37x5.00	D	4	451.0	100-1800	87-1700	75-1600	15.30	1000	100	24.0	325-1100	1800	2800*
28	.... O-600	......	T,B,Tr,M,I	DI	6-4.80x5.50	D	4	597.0	125-1800	110-1700	95-1600	15.75	1000	100	18.9	410-900	1798	2450*
29	McLaren **MR4-2	......	M,I	TC	4-5.59x7.87	W	4	773.2	88-1000	87-1000	79-1000	16.50	750	90	48.6	520-......	3840	4500
30	Meadows 4DC-330	Own	T,B,Tr,M,I	DI	4-4.73x4.73	W	4	331.0		80-2200	60-1800	15.50	1000	80	14.2	230-1200	860	
31	.... 4DC-420	Own	T,B,M,R,I	DI	4-5.12x5.12	D	4	421.2	86-1900	80-1900	66-1600	15.50	1000	79	18.5	245-1000	1223	1667
32	.... 6DC-630	Own	T,B,M,R,I	DI	6-5.12x5.12	D	4	633.0	130-1900	125-1900	100-1600	15.50	1000	79	15.6	420-1000	1568	2125
33	.... 6DC-970	Own	T,Tr,B,R,I,M	DI	6-5.90x5.90	W	4	970.0	200-1750	180-1650	150-1500	15.50	1000	82	23.3	630-900	3500	......
34	Mirrlees .... TV	......	M,R,I	DI	12-8½x13¾	W	4	9363.0	720-750	792-750	648-750	13.50	780	73.0	......	5550-750	......	......
35	.... TVS	......	M,R,I	DI	12-8½x13¾	W	4	9363.0	1050-750	1155-750	945-750	13.50	780	106	......	8100-750	......	......
36	.... ^J	......	M,R,I	DI	4-9¾x10½	W	4	3120	267-750	294-750	240-750	14.00	1000	80	......	2060-750	......	......
37	.... ^JV	......	MR,I	DI	8-9¾x10½	W	4	6240	600-900	660-900	540-900	14.00	1000	76	......	3060-900	......	......
38	Morris CDD2	Saurer	T,B	DI	6-3.34x4.92	W	4	259.0	75-2400	......	......	19.00	......	......	......	167-1500	820	......
39	Perkins Vehicle-P4	......	Ca,T,B,Tr	TC	4-3.50x5.00	D	4	192.4	46-2200	......	43-2200	16.50	900	86.1	11.3	123-1250	490	......
40	.... Indus.-P4	......	R,I	TC	4-3.50x5.00	D	4	192.4	34-1500	......	31-1500	16.50	900	93.5	25.2	123-1250	784	......
41	.... Vehicle-P6	......	Ca,T,B,Tr	TC	6-3.50x5.00	D	4	288.6	70-2200	......	67-2200	16.50	900	87.5	10.3	184-1250	686	......
42	.... Indus.-P6	......	R,I	TC	6-3.50x5.00	D	4	288.6	52-1500	......	49-1500	16.50	900	95.2	22.8	184-1250	1120	......
43	.... Marine-P6	......	M	TC	6-3.50x5.00	D	4	288.6	65-2000	......	65-2000	16.50	900	88.3	15.0	180-1300	......	980
44	.... Marine-P4	......	M	TC	4-3.50x5.00	D	4	192.4	......		43-2000	16.50	900	88.5	......	113-2000	......	810
45	.... S6 Ind	......	I	TC	6-4.38x5.00	D	4	451.0	80-1500		80-1500	16.50	950	93.7	......	265-1300	1344	......
46	.... S6M	......	M	TC	6-4.38x5.00	D	4	451.0	100-2000		100-2000	16.50	950	87.9	......	274-1500	......	1325
47	Petter AV-1	......	I	DI	1-3.15x4.33	W	4	33.7	5-1500	......	5-1500	16.50	1065	78.2	64	17.5-......	320	......
48	.... AV-2	......	I	DI	2-3.15x4.33	W	4	67.4	10-1500	......	10-1500	16.50	1065	78.2	45.2	35.0-......	455	......
49	.... AVA1	......	I	DI	1-3.15x4.33	N	4	33.7	4.5-1500	......	4.5-1500	16.50	1065	71.0	80.0	16-......	......	......
50	.... AVA2	......	I	DI	2-3.15x4.33	N	4	67.4	9-1500	......	9-1500	16.50	1065	71.0	62.0	32-......	......	......
51	.... B4	......	I	DI	4-4.33x4.33	W	4	256.0	36-1500	40-1500	36-1500	15.00	1065	75.0	30.0	150-......	......	......
52	Thornycroft TR6/DI	......	T,I	DI	6-3.62x4.12	D	4	256.0	61.5-2000	49.5-1700	42-1700	18.20	900	80	26.7	174-1300	1120	......
53	.... CR6	......	T,I	DI	6-3.88x4.75	D	4	337.0	78-1800	67.5-1700	57-1700	16.10	950	79.2	23.6	232-1300	1344	......
54	.... NR6/MV	......	T	DI	6-4.12x6.00	D	4	481.6	100-1750	94-1700	80-1700	16.00	915	94.0	21.0	322-1200	1690	......
	CZECHOSLOVAKIAN																	
55	Tatra 111	Own	T,B,Tr,R,I	DI	12-4.33x5.11	N	4	911.0	......	175-1800	140-1500	16.50	1200	81.0	15.5	541-1500	2170	......
56	 114	Own	T,B,Tr,I	DI	4-4.33x5.11	N	4	302.0	......	65-2200	50-1600	16.50	1200	81.0	22.2	181-1500	1110	......
	FRENCH																	
57	Berliet MDF-3C	Ricardo	T,B,Tr	TC	4-4.30x5.90	W	4	348.0	75-2000	65-1800	50-1500	17.00	995	79.0	49.4	......	1470	......
58	.... MDB4R	Ricardo	T,B,Tr	TC	4-4.72x6.29	W	4	441.7	85-1650	80-1650	70-1500	16.50	995	91.0	21.8	266-1350	1474	......
59	....	Ricardo	TB	TC	5-4.72x5.51	W	4	482.0	120-2000	114-2000	90-1500	16.50	1069	99.5	21.5	325-1500	1930	......
60	.... MDER	Ricardo	T,B,Tr	TC	6-4.72x6.29	W	4	662.5	125-1650	120-1650	105-1500	16.50	995	89.6	24.1	406-1200	2530	......
61	Bernard	Gardner	T,B,Tr,I	TC	6-4.25x5.98	W	4	909.0	108-1700	......	......	15.00	......	......	......	......	1680	......

For abbreviations, see pages 170 and 171
For Directory of the Manufacturers listed above, see page 63.

OTHER HEAVY OIL ENGINES

VALVES			PISTONS					PISTON PIN		CONNECTING RODS			MAIN BEARINGS		INJECTION SYSTEM					STARTING METHOD		OVERALL DIMENSIONS			
Arrangement	Intake Port Diameter and Lift (In.)	Exhaust Port Diameter and Lift (In.)	Material	Length	Weight with Rings and Pin (Lb.)	No. of Compression Rings	No. of Oil Rings	Diameter and Length (In.)	Locked in—	Material (S.A.E. No.)	Center to Center Length (In.)	Weight with Cap and Bushing (Lb.)	Number	Diameter (In.)	Make of Pump	Make of Valve	Valve Type, Open or Closed	Orifices	Pressure-Nozzle Opening (Lb. per Sq. In.)	Make	Type	Length—Fan to Flywheel (In.)	Width (In.)	Height—To Top of Air Cleaner (In.)	Line Number
BRITISH																									
VI	2.12-.480	1.87-.480	Ala	5.82	5.50	3	1	1.56-4.16	F	3435	11.40	7.50	7	3.35	C-S	C-S	C	Pi	1543	C-S	Ele	84½*	38⅝	40 7/16	1
VI	2.12-.480	1.87-.480	Ala	5.82	5.50	3	1	1.56-4.16	F	3435	11.40	7.50	7	3.35	C-S	C-S	C	Pi	1543	C-S	Ele	67 11/16	40 11/16	60	2
VI	1.40-.322	1.28-.327	Ala	5.90	4.75	3	1	1.56-3.50	F	3435	10.70	6.50	7	3.35	C-S	C-S	C	Mu	2572	C-S	Ele	52 3/16	28	42 11/16	3
VI	1.67-.480	1.49-.480	Ala	6.83	6.50	3	1	1.56-4.15	F	3435	11.40	7.50	7	3.74	C-S	C-S	C	Mu	2572	C-S	Ele	54⅜	31	52¼	4
VI	2.12-.480	1.87-.480	Ala	5.82	5.50	3	1	1.56-4.16	F	3435	11.40	7.50	7	3.35	C-S	C-S	C	Pi	1543	C-S	Ele	64 11/16	46	68 11/16	5
VI	1.65-.480	1.49-.480	Ala	6.83	6.50	3	1	1.77-4.41	F	3435	11.40	7.50	7	3.74	C-S	C-S	C	Mu	2572	C-S	Ele	54⅝	26⅝	49⅝	6
VI	1.62-.520	1.62-.500	Sil	6.72	5.50	3	2	1.62-3.65	F	Sil	11.25	7.00	7	3.62	C-S	C-S	..	Mu	2250	C-S	Ele	54	30	44	7
VI	1.28-.337	1.15-.337	Aly	4.27	......	3	1	1.00-2.83	F	**	8.81	3.25	5	2.25	C.A.V.	C.A.V.	C	Pi	1600	C.A.V.	H-E	41⅝*	25⅝	38⅛	8
VI	1.28-.337	1.15-.337	Aly	4.27	......	3	1	1.00-2.83	F	**	8.81	3.25	5	2.25	C.A.V.	C.A.V.	C	Pi	1600	C.A.V.	H-E	32⅞	21	33½	9
VI	1.22-.325	1.22-.325	Ala	4.27	1.91	3	1	1.00-2.83	F	......	8.81	3.25	3	2 56	C-B	C-B	C	Pi	1600	......	Han	21¾	20	31½	10
VI	1.28-.337	1.15-.337	Aly	4.27	1.90	3	1	1.00-2.83	F	**	8.81	3.25	3	2.25	C.A.V.	C.A.V.	C	Pi	1600	C.A.V.	H-E	23¼	22½	34½	11
VI	......	......	Ala	......	......			......	...	SF	......	......	..	2.00	......	......	..	Pi	......	......	Han	28	19	27½	12
VI	1.25-......	1.25-......	Ala	......	......	3	1	1.00-1.44	F	SF	......	......	2	2.00	......	......	C	Pi	1660	......	Han	28¼	16½	28½	13
VI	1.25-......	1.34-......	Ala	......	......	3	1	1.00-1.44	F	SF	......	......	2	2.00	......	......	C	Pi	1660	......	Han	28¼	16½	28½	14
VI	1.75-.49	1.59-.49	Ala	6.06	5.5	3	2	1.50-3.81	F	......	12.18	7.75	7	3.64	C-S	C-S	C	Mu	2425	C-S	Ele	56 11/16	28⅞	45 1/16	15
VI	1.75-.49	1.59-.49	Ala	6.06	5.5	3	2	1.50-3.81	F	......	12.18	7.75	7	3.88	C-S	C-S	C	Mu	2425	C-S	Ele	55 11/16	31⅞	44 1/16	16
VI	1.81-.451	1.62-.451	YA	5.86	5.67	4	2	1.75-3.84	F	2335	10.50	7.35	7	3.35	C-S	C-S	O	Mu	2200	C-S	Ele	55 11/16	28.72	47.2	17
VI	1.81-.45	1.62-.45	YA	6.49	8.25	4	2	1.75-4.18	F	EN16T	10.50	7.40	7	3.75	C-S	C-S	O	Mu	2200	C-S	Ele	58½	28.72	47½	18
VI	1.31-.524	1.14-.389	SAA	6.83	6.84	4	2	2.00-3.62	F	4037	12.58	11.5	8	3.37	C-S	C-S	C	Mu	2570	C.A.V.	Ele	44 1/16	31¾	52 11/16	19
VI	1.31-.438	1.06-.438	SAA	6.46	5.09	4	2	1.50-3.34	F	4037	11.12	6.70	7	3.37	C-S	C-S	C	Mu	2200	C.A.V.	Ele	50 3/16	26⅝	45 1/16	20
VI	1.50-.408	1.25-.408	SAA	5.25	3.90	3	2	1.37-3.25	F	4037	7.75	4.85	7	3.12	C-S	C-S	C	Mu	2200	C.A.V.	Ele	47 3/16	23 1/16	38⅛	21
VI	......	......	CI	5.75	5.30	3	2	1.62-2.00	F	DF	9.50	4.10	7	3.00	C.A.V.	C.A.V.	C	Si	2250	Sim	H-E	48	29⅞	38⅞	22
VI	......	......	Ala	......	......	...	...	......	...	......	......	......	5	......	C-G	G	C	Mu	2500	......	H-E	......	......	......	23
VI	......	......	Ala	......	......	...	...	......	...	......	......	......	5	......	C-G	G	C	Mu	2500	......	H-E	......	......	......	24
VI	......	......	Ala	......	......	...	...	......	...	......	......	......	5	......	C-G	G	C	Mu	2500	......	HEC	......	......	......	25
VI	1.30-.383	1.30-.383	Ala	5.53	3.83	3	2	1.30-3.25	F	EN16S	8.80	5.48	7	2.90	C.A.V.	Ley	C	Mu	2056	C.A.V.	Ele	41 11/16	22 11/16	38 11/16	26
VI	1.93-.458	1.55-.458	Ala	5.75	5.00	4	1	1.62-1.37	F	EN16S	10.50	6.36	7	3.27	C.A.V.	Ley	C	Mu	2056	C-S	Ele	48⅞	30.91	44.57	27
VI	1.80-.494	1.80-.494	Ala	6.60	6.81	3	2	1.62-4.20	F	EN16S	10.80	9.85	7	3.50	C.A.V.	Ley	C	Mu	2056	C-S	Ele	52⅛	30 11/16	46.44	28
VI	1.89-.400	1.89-.48	Ala	8.58	10.5	4	1	1.77-4.91	F	NS	15.15	22.0	7	3.34	Bryce	Bryce	...	Pi	1500	C-O	AE	62⅛	30	62½	29
VI	1.68-.500	2.12-.550	Ala	6.47	7.30	3	2	1.73-4.40	F	NCM	9.87	8.00	5	3.35	C.A.V.	C.A.V.	C	Mu	2500	C.A.V.	Ele	39¼	27⅛	36½	30
VI	2.12-.550	1.50-.500	Ala	5.50	......	3	2	1.62-4.13	F	NCM	8.94	...	5	3.35	C.A.V.	C.A.V.	C	Mu	2500	C.A.V.	Ele	35.9	21	43¼	31
VI	2.12-.550	1.68-.550	Ala	6.47	7.30	3	2	1.73-4.40	F	NCM	9.87	8.00	7	3.35	C.A.V.	C.A.V.	C	Mu	2500	C.A.V.	Ele	50¼	27⅛	43¼	32
VI	1.81-.450	1.44-.450	Ala	7.87	13.0	3	2	2.37-4.94	F	NCM	11.0	17.0	7	4.25	C.A.V.	C.A.V.	C	Mu	2500	C.A.V.	EA	64.6	31	47.8	33
VI	2.75-.860	2.50-.860	Ala	11.71	39.0	3	2	3.00-7.37	F	EN12	29.56	78.0	8	7.50	Bryce	Bryce	C	Mu	2600	Own	Air	128	60	90	34
VI	2.75-.860	2.50-.860	Ala	11.46	38.0	3	2	3.00-7.37	F	EN12	29.68	78.0	8	7.50	Bryce	Bryce	C	Mu	2600	Own	Air	138	63	90	35
VI	2.87-.940	2.87-.940	Ala	12.78	62.5	3	2	3.75-8.50	F	EN12	26.75	101	6	7.50	Bryce	Bryce	C	Mu	2900	Own	Air	105	48	75	36
VI	2.87-.940	2.87-.940	Ala	12.78	62.5	3	2	3.75-8.50	F	EN12	27.50	110	6	8.25	Bryce	Bryce	C	Mu	2900	Own	Air	112	76	81	37
VI	1.38-.383	1.22-.383	Ala	4.64	2.70	4	2	1.37-2.72	F	EN21	9.87	4.00	7	3.06	C.A.V.	C.A.V.	C	Si	2350	C.A.V.	Ele	38⅝	22 1/16	42⅛	38
VI	1.40-.347	1.18-.347	YA	4.25	2.55	3	2	1.25-2.96	F	3240	9.00	3.70	5	2.75	C.A.V.	C.A.V.	C	Mu	1764	C.A.V.	Ele	24¾‡	23⅝	36	39
VI	1.40-.347	1.18-.347	CI	4.25	4.42	3	2	1.25-2.96	F	3240	9.00	3.70	5	2.75	C.A.V.	C.A.V.	C	Mu	1764	C.A.V.	Ele	34½	23⅜	34⅝	40
VI	1.40-.347	1.18-.347	YA	4.25	2.55	3	2	1.25-2.96	F	3240	9.00	3.70	7	2.75	C.A.V.	C.A.V.	C	Mu	1764	C.A.V.	Ele	34¾‡	23⅝	39⅝	41
VI	1.40-.347	1.18-.347	CI	4.25	4.42	3	2	1.25-2.96	F	3240	9.00	3.70	7	2.75	C.A.V.	C.A.V.	C	Mu	1764	C.A.V.	Ele	42⅝	23⅜	34⅝	42
VI	1.40-.347	1.18-.347	YA	4.25	2.55	3	2	1.25-2.96	F	3240	9.00	3.70	7	2.75	C.A.V.	C.A.V.	C	Mu	1764	C.A.V.	Ele	82¼	24	34½	43
VI	1.40-.348	1.18-.348	YA	4.24	2.56	3	2	1.25-2.96	F	3240	9.00	3.70	5	2.75	C.A.V.	C.A.V.	C	Mu	1764	C.A.V.	Ele	48½	24 3/16	34½	44
VI	2.00-.462	1.50-.383	YA	4.91	3.77	3	2	1.38-3.81	F	2S.81	9.38	5.33	7	3.12	C.A.V.	C.A.V.	C	Mu	1470	C.A.V.	Ele	50 3/16	27½	38¼	45
VI	2.00-.462	1.50-.383	YA	4.91	3.77	3	2	1.38-3.81	F	2S.81	9.38	5.33	7	3.12	C.A.V.	C.A.V.	C	Mu	1470	C.A.V.	Ele	61 11/16*	26	37⅝	46
VI	1.12-.312	1.12-.312	Ala	4.71	2.10	3	2	.94-2.56	F	1040	9.13	4.12	2	2.25	Bryce	Bryce	C	Mu	2500	......	H-E	20	17¾	28½	47
VI	1.12-.312	1.12-.312	Ala	4.71	2.10	3	2	.94-2.56	F	1040	9.13	4.12	3	2.25	Bryce	Bryce	C	Mu	2500	......	H-E	26	17¾	28½	48
VI	1.12-.312	1.12-.312	Ala	4.71	2.10	3	1	.94-2.56	F	1040	9.13	4.12	2	2.25	Bryce	Bryce	C	Mu	2500	......	H-E	20	20	29	49
VI	1.12-.312	1.12-.312	Ala	4.71	2.10	3	1	.94-2.56	F	1040	9.13	4.12	3	2.25	Bryce	Bryce	C	Mu	2500	......	H-E	26	20⅝	31 11/16	50
VI	1.62-.312	1.62-.312	Ala	5.65	5.50	3	2	1.19-3.44	F	1040	9.13	6.75	5	3.00	Bryce	Bryce	C	Mu	2500	......	H-E	44	21	37	51
VI	1.43-.393	1.25-.393	Ala	4.34	2.75	3	2	1.25-2.96	F	4130	8.00	3.56	7	2.50	C.A.V.	C.A.V.	C	Mu	2572	C.A.V.	Ele	43 11/16	27¾	38⅝	52
VI	1.53-.443	1.34-.443	Ala	4.86	3.81	3	2	1.25-3.42	F	4130	10.75	5.75	7	3.25	C.A.V.	C.A.V.	C	Mu	2572	C.A.V.	Ele	50 1/16*	27½	37 11/16	53
VI	1.62-.510	1.43-.510	Ala	5.32	4.18	3	2	1.37-3.56	F	4130	13.00	7.75	7	3.50	C.A.V.	C.A.V.	C	Mu	2900	C.A.V.	Ele	50⅛*	23⅝	43⅝	54
CZECHOSLOVAKIAN																									
In	1.75-.315	1.50-.315	Ala	6.06	4.50	4	1	1.56-3.70	F	**	10.62	6.44	7	RB	P.A.L.	P.A.L.	C	Mu	2850	P.A.L.	Ele	62	48½	41.4	55
In	1.75-.315	1.50-.315	Ala	6.06	4.50	4	1	1.56-3.70	F	**	10.62	6.44	5	RB	P.A.L.	P.A.L.	C	Mu	2850	P.A.L.	Ele	43½	29.4	34.6	56
FRENCH																									
VI	1.65-.400	1.65-.400	Ala	6.80	5.89	3	2	1.53-3.70	F	35CD4	......	......	5	3.14	Lav	Lav	C	Pi	1422	PR	Ele	45.2	25.5	43.1	57
VI	1.85-.400	1.65-.400	Ala	6.80	7.30	3	2	1.77-4.00	F	35CD4	......	......	5	3.14	Lav	Lav	C	Pi	1422	PR	Ele	49.1	29.9	39.8	58
VI	1.80-.522	1.56-.522	Ala	5.80	6.38	3	2	1.77-4.05	F	NCM	10.43	8.74	6	3.54	Lav	Lav	C	Pi	1561	L-PR	Ele	55¾	27.0	40.0	59
VI	1.96-.440	1.81-.440	Ala	6.60	7.90	3	3	1.77-4.00	F	35CD4	......	......	7	3.14	Lav	Lav	C	Pi	1422	PR	Ele	65	29.8	42.2	60
VI	......	......	Ala	......	......	4	2	......	...	......	......	......	7	......	......	......	...	......	......	......	Ele	54.6	25	44	61

For abbreviations, see pages 170 and 171
For Directory of the Manufacturers listed above, see page 63.

FOREIGN DIESEL AND

Line Number	Engine Make and Model	Built under License from	Designed for	Type	Number of Cylinders Bore and Stroke (In.)	Cylinder Liners—Type	Cycle	Piston Displacement (Cu. In.)	GENERAL: With Bare Engine: Max. Brake Hp. at Specified R.P.M.	With Standard Accessories: Max. Intermittent Hp. at Specified R.P.M.	With Standard Accessories: Continuous Sustained Hp. at Specified R.P.M.	Compression Ratio—to 1	Max. Combustion Pressure (Lb. per Sq. In.)	B.M.E.P. at Continuous Hp. (Lb. per Sq. In.)	Weight per Continuous Hp. (Lb.)	Max. Torque in Lb. Ft. at Specified R.P.M.	Shipping Weight (Lb.): Automotive or Industrial	Shipping Weight (Lb.): Marine
	FRENCH—(Cont'd)																	
1	Citron T46	Ricardo	Ca,T	TC	6-3.70x4.33	D	4	279.0	75-2500	......	......	16.30	924	......	......	170-1700	1267	......
2	Hispano .... DWXLDF	Hercules	T,B	......	6-4.25x5.00	D	4	426.0	140-2400	......	......	15.00	750	93.0	......	316-1600	1320	......
3	Irat & Co. .... DOG	Gro&Oil	T,B,Tr	......	2-4.00x4.90	W	4	132.0	31-2200	28-2500	24-2500	17.00	1066	91.0	......	......	......	......
4	....	Gro&Oil	M,I	......	4-4.00x4.90	W	4	264.0	75-2500	72-2500	44-2500	17.00	1066	91.0	......	......	......	......
5	....	Gro&Oil	M,I	......	6-4.00x4.90	W	4	396.0	115-2500	112-2500	64-2500	17.00	1066	91.0	......	......	......	......
6	Latil H14	Own	T,B,Tr,R	DI	4-4.25x6.00	D	4	340.0	85-2000	80-2000	75-1850	14.00	......	......	41.8	235-......	3140	......
7	M.A.P. 2H		General	DI	2-3.46x4.01	W	2	153.0	55-1800	50-1800	45-1800	16.00	1069	99.5	26.9	152-1300	748	1210
8	4H		General	DI	4-3.46x4.01	W	2	306.0	110-1800	100-1800	90-1800	16.00	1069	99.5	20.2	304-1500	1155	1815
9	Panhard 4HL	Lanova	T,B,Tr	DI	4-4.33x5.90	D	4	347.0	80-2000	......	......	15.00	995	89.6	......	217-1400	1243	......
10	Renault 505	Own	T,B,M,I	DI	4-4.91x6.69	W	4	509.0	......	85-1600	60-1200	15.60	1137	81.7	30.3	328-1200	1968	1980
11	568	Own	B		6-4.14x4.72	W	4	380.0	105-2500			15.70	1210	85.4	......	231-1700	1410	......
12	Rochet-Schneider 455	Own	T,Tr,M	DI	4-4.52x5.90	D	4	380.0	75-1800	63-1800	52-1800	16.50	1137	......	29.4	234-1400	1528	......
13	 465	Own	R	DI	6-4.52x5.90	D	4	570.0	105-1800	87-1800	73-1800	16.50	1137	......	27.1	325-1200	1980	......
14	Somua D6104	Lanova	T,B,Tr	......	6-4.33x5.90	W	4	524.0	120-2000	......	......	15.50	853	89.6	......	340-1300	1540	......
15	Unic ZU2	Own	T,B,Tr,M,R	TC	2-4.63x5.90	W	4	200.1	......	30-1450	28-1350	16.50	995	75.3	......	114-1200	......	......
16	.... ZU4	Own	T,B,Tr,M,R	TC	4-4.63x5.90	W	4	400.2	......	80-1900	52-1350	16.50	995	75.3	......	242-1200	......	......
17	.... ZU6	Own	T,B,Tr,M,R	TC	6-4.63x5.90	W	4	600.3	......	110-1750	78-1350	16.50	995	75.3	......	354-1200	......	......
18	Willeme 517P		T,Tr,M,R,I	PC	6-5.12x6.70	W	4	825.0		150-1600	95-1000	18.00	665	......	22.6	555-900	2145	
	GERMAN																	
19	Bussing-NAG LD	Own	T,B	PC	6-4.33x5.12	W	4	452.0	110-1800	105-1800	90-1800	18.50	995	86.5	19.6	328-1200	1761	......
20	U9	Own	T,B	PC	6-4.52x5.52	W	4	532.5	140-2000	135-2000	110-2000	19.00	995	80.8	15.6	398-1300	1720	......
21	GD8	Own	T,B	PC	6-5.12x6.69	N	4	826.0	150-1500	150-1500	120-1500	17.00	995	75.7	17.1	591-900	2050	
22	Daimler-Benz DM67/4		T,B	PC	6-4.14x5.51	N	4	443.0	118-2100		110-2100	20.00	853	93.8	15.5	304-1150	1735	
23	M202A		M,I	PC	2-5.50x8.25	W	4	394.0	53-980	50-1000	45-1000	17.00	600	91.0	35.6	285-980	1600	1680
24	M204A		M,I	PC	4-5.50x8.25	W	4	788.0	106-980	100-1000	90-1000	17.00	600	91.0	30.1	570-980	2710	2800
25	Deutz F4L-514		T,B,Tr,M,I	TC	4-4.33x5.51	N	4	324.5	......	75-2250	......	18.30	......	79.6	......	199-1100	924	1210
26	F6L-514		T,B,Tr,M,I	TC	6-4.33x5.51	N	4	486.8	......	110-2250		18.30	......	78.2	......	303-1100	1381	1536
27	M.A.N. D0814GS		Tr	DI	4-3.46x4.33	W	4	163.4			25-1500	18.00	......	78.5	42.0	100-1100	1050	......
28	D1040G2		T,B	DI	6-4.33x5.51	N	4	487.1	120-1950	105-1950	90-1950	17.00	......	......	15.5	340-1200	1400	......
29	Mercedes-Benz OM312		T,B	PC	6-3.54x4.72	N	4	279.3	95-2800	90-2800	90-2800	19.40	1139	105.5	9.3	195-1600	810	
30	OM636		Ca	PC	4-2.89x3.94	N	4	103.5	40-3200	38-3200	33-3200	19.00	924	103.8	19.7	71-2000	437	
	ITALIAN																	
31	Lancia 864		T,Tr	DI	6-4.25x5.91	W	4	504.0	122-2000			14.00				342-1200	1710	......
32	OM COD	Saurer	T	DI	4-3.94x4.73	W	4	230.0	57-2200		48	16.00	1102	90.5		159-1400	748	......
33	CR1D	Saurer	T	DI	4-4.33x5.51	W	4	324.5	70-1800		58	16.00	1102	96.5		210-1200	968	......
34	CH1D	Saurer	T	DI	8-4.33x5.51	W	4	649.0	135-1800		115	16.00	1102	93.5		434-1200	1442	......
35	BXD	Saurer	M,R	DI	6-5.12x7.09	W	4	875.0	175-1500		150	15.20	1102	90.0		656-1000	2840	......
36	SBD	Saurer	R	DI	12-6.30x7.88	W	4	2945.0	560-1400		480	15.60	1102	109.5		2152-1000	6600	......
	SWISS																	
37	Saurer .... CBD	Own	......	......	4-3⅓x4½	W	4	173.0	48-2500	......	......	......	......	......	......	175-2000	......	616
38	.... CDD	Own	......	......	6-3⅓x4½	W	4	260.0	72-2500	......	......	......	......	......	......	155-1500	......	881
39	CR1D	Own	......	......	4-4.3x5.5	W	4	324.0	69-1800	......	......	......	......	......	......	200-1400	970	......
40	CT1D	Own	......	DI	6-4.3x5.5	W	4	486.0	108-2000	......	......	16.00	......	......	......	320-1300	1518	......
41	CT1DL	Own	......	......	6-4⅓x5.5	W	4	486.0	135-1900	......	......	......	......	......	......	400-1300	1365	......
42	CH1D	Own	......	......	8-4.3x5.5	W	4	648.0	140-2000	......	......	......	......	......	......	420-1300	1540	......
43	.... CVD	Own	......	......	12-4⅓x5.5	W	4	974.0	230-2200	......	......	......	......	......	......	650-1200	2200	2645
44	.... CVDL	Own	......	......	12-4⅓x5.5	W	4	974.0	300-2200	......	......	......	......	......	......	850-1200	2535	2976
45	BUD	Own		DI	6-4.72x6.70	W	4	705.0	......			15.70					2335	......

ABBREVIATIONS

- •—Includes reverse and reduction gears.
- ••—3% nickel H. T.
- *—Also available in 1, 2, 3, 5, 6, 8 cyl. models.
- ▲—Also available in 3, 5, 6, 8 cyl. models.
- ▲▲—Also available in 2, 3, 5, 6 cyl. models.
- ‡—No flywheel.
- ♠—Excludes flywheel, fly. hsg. and starter ring.
- ♥—Fitted with wet and special dry liners.
- °—To face of flywheel.
- °°—Also available in 4 and 8 cyl. models.
- °°°—Also available in 12 and 16 cyl. models.
- ••—VMS-135.

A—Aluminum.
AC—Air chamber.
AE—Air-electric.
Ala—Aluminum alloy.
Aly—Alloy.
B—Buses.
C—Closed.
Ca—Car.
C-B—C. A. V. or Bryce.
C-G—C. A. V.-Gardner.
CI—Cast iron.
CN—Chrome nickel steel.
C-O—C. A. V.-Own.
C-S—C. A. V. or Simms.
D—Dry liners used.
DF—Drop forging.
DI—Direct injection.
EA—Electric-aux. gas engine.
Ele—Electric.
F—Floating.
G—Gardner.
GA—Gardner open chamber.

For Directory of the Manufacturers listed above, see page 63.

OTHER HEAVY OIL ENGINES—*Continued*

VALVES			PISTONS					PISTON PIN		CONNECTING RODS			MAIN BEARINGS		INJECTION SYSTEM					STARTING METHOD		OVERALL DIMENSIONS			
Arrangement	Intake Port Diameter and Lift (In.)	Exhaust Port Diameter and Lift (In.)	Material	Length	Weight with Rings and Pin (Lb.)	No. of Compression Rings	No. of Oil Rings	Diameter and Length (In.)	Locked in—	Material (S.A.E. No.)	Center to Center Length (In.)	Weight with Cap and Bushing (Lb.)	Number	Diameter (In.)	Make of Pump	Make of Valve	Valve Type, Open or Closed	Orifices	Pressure-Nozzle Opening (Lb. per Sq. In.)	Make	Type	Length—Fan to Flywheel (In.)	Width (In.)	Height—To Top of Air Cleaner (In.)	Line Number
										FRENCH—(Cont'd)															
VI	1.86-.394	1.30-.394	YA	5.59	3.08	3	2	1.30-3.07	F	1035	8.85	5.18	7	2.91	Lav	Lav	C	Pi	1422	Own	Ele	49½	32.8	41.0	1
VI	1.68-.395	1.37-.395	Ala	6.84	...	4	2	1.50-3.62	F	...	8.80	...	7	2.06	Bosch	Bosch	C	Pi	1650	L.D.A.	Ele	56	39¾	17¾	2
VI	1.69-.450	1.37-.450	Ala	5.80	4.71	4	2	1.49-...	F	...	9.05	7.10	3	3.14	Lav	Lav	C	Pi	2133	Lav	Ele	25	21	39	3
VI	1.69-.450	1.37-.450	Ala	5.80	4.71	4	2	1.49-...	F	...	9.05	7.10	5	3.14	Lav	Lav	C	Pi	2133	Lav	Ele	34	21	39	4
VI	1.69-.450	1.37-.450	Ala	5.80	4.71	4	2	1.49-...	F	...	9.05	7.10	7	3.14	Lav	Lav	C	Pi	2133	Lav	Ele	45	21	39	5
VI	2.04-.484	1.81-.421	Ala	5.84	4.40	4	2	1.43-3.79	F	...	11.00	5.85	5	3.26	Lav	PM	...	Mu	...	Bosch	Ele	43	28.5	51	6
...	...	...	Y	4.73	4.84	5	2	1.73-2.68	L	...	7.55	3.74	2	RB	L-B	L-B	C	Pi	1422	L-B	Ele	28	23.6	33.6	7
...	...	...	Y	4.73	4.84	5	2	1.73-2.68	L	...	7.55	3.74	3	RB	L-B	L-B	C	Pi	1422	L-B	Ele	41¾	27.1	37.6	8
VI	...	...	Ala	5.90	3.71	3	1	1.57-3.70	F	...	11.80	4.45	5	3.40	PM	PM	C	Si	2062	PR	Ele	40	25.5	41	9
VI	1.95-.400	1.98-.400	Ala	7.28	8.05	4	1	1.77-4.00	F	...	14.56	10.8	5	3.77	Own	Own	C	Mu	2844	Own	Ele	45.2	28.5	44.4	10
...	1.32-.410	1.11-.374	Ala	5.40	4.75	4	2	1.34-3.62	...	CN	8.50	5.01	7	2.76	Own	Own	...	Mu	2375	Own	Ele	50.4	42.1	21.8	11
VI	1.57-.450	1.77-.450	Ala	6.00	6.93	4	2	1.41-3.85	F	CN	11.91	9.90	5	3.34	...	...	C	Pi	2488	...	Ele	41	24.8	42.4	12
VI	1.77-.450	1.77-.450	Ala	6.00	6.93	4	2	1.41-3.85	F	CN	11.91	9.90	7	3.34	...	...	C	Pi	2488	...	Ele	54	28.3	44.2	13
VI	1.80-.470	1.65-.470	Ala	5.90	4.84	3	1	1.57-3.70	F	CN	11.80	6.30	7	3.46	PM	PM	C	Pi	2133	Lav	Ele	49.3	27.9	43.3	14
VI	1.69-.470	1.45-.470	Ala	6.70	5.50	4	2	1.57-3.89	F	CN	11.50	11.0	3	3.34	PM	PM	C	Mu	2844	Lav	Ele	36.3	19.7	39.3	15
VI	1.69-.470	1.45-.470	Ala	6.70	5.50	4	2	1.57-3.89	F	CN	11.50	11.0	5	3.34	PM	PM	C	Mu	2844	Lav	Ele	47.6	27.1	44.4	16
VI	1.69-.470	1.45-.470	Ala	6.70	5.50	4	2	1.57-3.89	F	CN	11.50	11.0	7	3.34	PM	PM	C	Mu	2844	Lav	Ele	59.6	27.9	43.6	17
VI	2.21-...	2.05-...	Ala	7.20	8.74	3	2	1.89-4.35	...	...	14.45	13.05	7	3.54	L-B	L-B	O	Pi	1280	L-B	Ele	62	26.8	45	18
										GERMAN															
VI	1.66-.453	1.47-.453	Ala	7.00	5.78	3	2	1.58-3.66	F	MS	10.62	8.47	7	3.34	Bosch	Bosch	C	Pi	1190	Bosch	Ele	54½	31½	41	19
VI	1.99-.484	1.50-.484	Ala	6.50	6.21	3	2	1.58-3.89	F	MS	10.62	8.47	7	3.55	Bosch	Bosch	C	Pi	1490	Bosch	Ele	56½	48	22	20
VI	2.05-.391	2.05-.391	Ala	7.48	8.40	4	2	1.77-4.41	F	MS	13.78	11.90	7	3.55	Bosch	Bosch	C	Pi	1490	Bosch	Ele	61¾	31½	48 1/16	21
VI	1.50-.438	1.50-.438	Ala	6.31	4.58	4	2	1.38-3.55	F	Ste	11.41	7.72	7	3.15	Bosch	Bosch	C	Pi	1635	Bosch	Ele	53⅝	29 13/16	46¼	22
VI	1.75-.500	1.75-.500	A	8.50	11.00	4	1	2.06-4.75	F	...	15.12	15.50	3	3.31	Bosch	Bosch	C	Si	1350	Own	AE	36.4	28.3	45.8	23
VI	1.75-.500	1.75-.500	A	8.50	11.00	4	1	2.06-4.75	F	...	15.12	15.50	5	3.31	Bosch	Bosch	C	Si	1350	Own	AE	57.6	28	46	24
VI	1.77-.433	1.77-.433	Ala	6.06	5.37	3	2	1.57-3.66	F	5132	10.04	6.98	5	2.80	Bosch	Bosch	C	Pi	2205	Bosch	Ele	43.7	29.1	41	25
VI	1.77-.433	1.65-.433	Ala	6.06	5.37	3	2	1.57-3.66	F	5132	10.04	6.98	7	2.95	Bosch	Bosch	C	Pi	2205	Bosch	Ele	53.9	32.8	40.2	26
VI	1.42-.315	1.42-.315	Ala	5.58	2.77	3	1	1.26-.291	F	MS	8.47	3.87	5	2.95	Bosch	Bosch	C	Si	1850	Bosch	Ele	30.3	25.6	34.6	27
VI	1.77-.473	1.77-.473	Ala	6.89	6.22	3	1	1.58-3.66	F	MS	10.82	6.29	7	3.39	Bosch	Bosch	C	Si	1850	Bosch	Ele	46.2	29.6	47.0	28
VI	1.42-.398	1.22-.390	Ala	4.55	2.72	4	2	1.18-3.02	F	C35	9.06	3.92	7	2.76	Bosch	Bosch	C	Si	1422	Bosch	Ele	36.8	26.6	41.3	29
VI	1.16-.350	1.04-.295	Ala	3.50	1.46	3	2	3.87-2.50	F	C35	7.64	1.75	3	2.17	Bosch	Bosch	C	Si	1422	Bosch	Ele	28.5	23.8	31.1	30
										ITALIAN															
VI	1.42-.354	1.18-.354	A	6.30	5.06	4	2	1.73-3.54	...	Ste	11.81	8.04	7	3.74	Bosch	Bosch	...	Mu	3550	Ma	Ele	57.7	22.2	42.1	31
VI	...-.414	-.414	Ala	5.71	2.95	3	2	1.50-3.31	F	CN	...	5.10	5	3.00	O-S	Own	...	Mu	2940	Ma	Ele	38.4	22.6	34.6	32
VI	...-.333	-.333	Ala	5.80	4.14	2	3	1.65-3.54	F	CN	...	6.94	5	3.34	O-S	Own	...	Mu	2940	Ma	Ele	38.0	31.8	43.8	33
VI	...-.440	-.440	Ala	5.80	4.14	2	3	1.65-3.54	F	CN	...	6.94	5	3.74	O-S	Own	...	Mu	2940	Ma	Ele	52.3	37.8	42.4	34
VI	...-.445	-.445	Ala	8.27	8.64	3	2	1.77-4.49	F	CN	...	13.00	7	RB	Bosch	Own	...	Mu	2940	Ma	Ele	55.7	34.8	60.6	35
VI	...-.475	-.475	Ala	8.66	12.06	3	3	2.56-5.30	F	CN	...	23.80	7	RB	O-S	Own	...	Mu	2940	Ma	Ele	76.2	75.2	29.6	36
										SWISS															
VI	...	...	Ala	...	...	...	...	...	...	...	...	...	5	...	Own	Own	...	...	...	...	Ele	31	25.5	35	37
VI	...	...	Ala	...	...	...	...	...	...	...	...	...	7	...	Own	Own	...	...	...	...	Ele	40	23.6	24.8	38
VI	...	...	Ala	...	...	4	1	...	...	...	...	...	5	...	Own	Own	...	...	...	...	Ele	38	22	41	39
VI	...	...	Ala	...	...	4	1	...	...	Ste	...	...	7	...	Own	Own	...	Mu	...	...	Ele	69	26.7	40.3	40
VI	...	...	Ala	...	...	4	1	...	...	...	...	...	7	...	Own	Own	...	...	...	...	Ele	68	26.7	40.3	41
VI	...	...	Ala	...	...	4	1	...	...	...	...	...	5	...	Own	Own	...	...	...	...	Ele	64½	37	39	42
VI	...	...	Ala	...	...	4	1	...	...	...	...	...	7	...	Own	Own	...	...	...	...	Ele	70	37	39	43
VI	...	...	Ala	...	...	4	1	...	...	...	...	...	7	...	Own	Own	...	...	...	...	Ele	82	36	36	44
VI	...	...	Ala	...	...	...	...	...	...	Ste	...	...	7	...	...	...	...	Mu	...	...	Ele	...	...	...	45

ABBREVIATIONS—Cont.

Han—Hand.
H-E—Hand or electric.
HEC—Hand, electric or compressed air.
I—Industrial.
In—Inclined in-head.
L—Locked in rod.
Lav—Lavalette.
L-B—Lavalette-Bosch.
Ley—Leyland.
L-PR—Lavalette or Paris-Rhone.
M—Marine.
Ma—Marelli
MS—Mn-Si steel.
Mu—Multiple.
N—No or none.
NCM—Nickel Ch. Mo. steel.
NS—Nickel steel.
O—Open.
O-S—Own or Saurer.
PC—Precombustion chamber.
Pi—Pintle.
PM—Precision Mecanique.
PR—Paris Rhone.
R—Railcars.
RB—Roller bearings.
SAA—Silicon aluminum alloy—anodized.
Si—Single.
Sil—Silicon "Lo-Ex."
Sim—Simms.
Ste—Steel.
SF—Steel forging.
T—Trucks.
TC—Turbulence chamber.
Tr—Tractors.
Var—Various.
VI—Vertically in-head.
W—Wet liners.
YA—Special "Y" alloy heat treated.

For Directory of the Manufacturers listed above, see page 63.

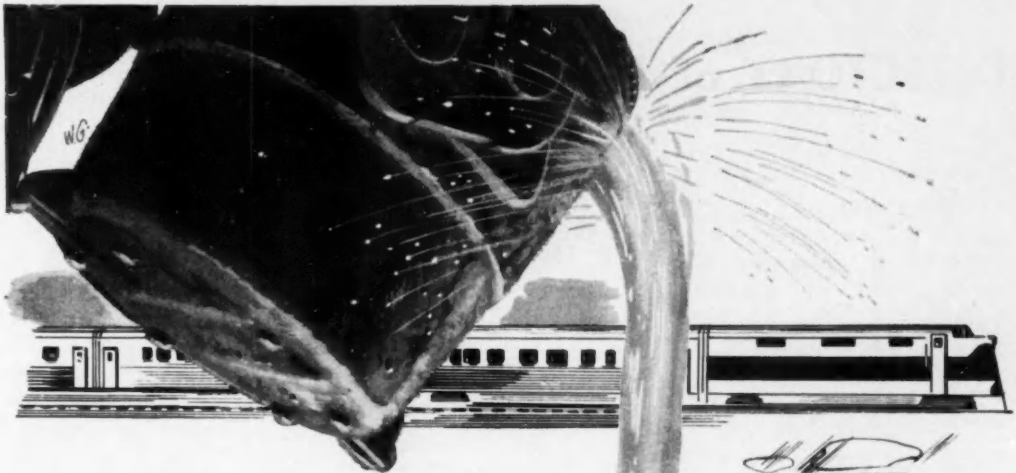
BRITISH AIRCRAFT ENGINES
RECIPROCATING TYPE

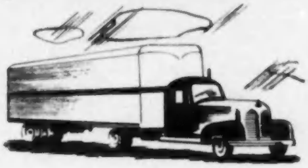
ENGINE MAKE AND MODEL	General Data: Arrangement	General Data: Cooling Medium	General Data: Number of Cylinders Bore and Stroke (In.)	General Data: Total Piston Displacement (Cu. In.)	General Data: Compression Ratio	General Data: B.M.E.P. at Maximum Hp. (Lb. per Sq. In.)	General Data: Blower Ratio	General Data: Cylinder Material	No. of Valves per Cylinder: Intake	No. of Valves per Cylinder: Exhaust	Valve Arrangement	Ratings: Maximum (Except Take-off): Horsepower	Ratings: Maximum (Except Take-off): R.P.M.	Ratings: Maximum (Except Take-off): At Sea Level or Altitude (Ft.)	Ratings: Take-off: Horsepower	Ratings: Take-off: R.P.M.	Ratings: Cruising: Horsepower	Ratings: Cruising: R.P.M.	Octane Rating of Fuel Required	Propeller Drive Ratio	Weight (Lb.): Engine—Dry Without Hub or Starter	Weight (Lb.): Per Maximum Hp. (Except Take-off)	Carburetor: Number Used and Make	Carburetor: Type	Ignition System—Make	Starting: Make	Starting: Method	Installation Dimensions (Overall—Ins.): Length	Installation Dimensions (Overall—Ins.): Height or O.D.	Installation Dimensions (Overall—Ins.): Width	Height above Engine Bed (In.)	Diameter Mounting Ring or Distance Between Bearers (In.)
Alvis Ltd. *Leonides 501-1, 2, 3, 4	Rad	Air	9-4.80x4.41	719	6.80	175	6.50	5	1	1	I	480	2900	8000	570	3000	400	2800	100	.800	770	1.72	1-Hob	PI	BTH	Rot	H-E	53.0	41.5	...	...	16.7
Bristol LE23HM	Rad	Air	9-4.80x4.41	719	6.80	176	6.50	5	1	1	I	485	3000	7500	580	3200	400	2800	100	Dir	642	1.32	1-Hob	PI	BTH	Rot	H-E	32.0	41.5	...	...	16.7
Westland WS51L	Rad	Air	9-4.80x4.41	719	6.80	175	6.50	5	1	1	I	480	2900	7250	520	3000	400	2800	100	.800	790	1.70	1-Hob	PI	BTH	Rot	H-E	54.96	41.5	...	...	16.7
Faireys LE22HM	Rad	Air	9-4.80x4.41	719	6.80	167	6.50	5	1	1	I	440	2900	6750	520	3000	400	2800	100	Dir	690	1.57	1-Hob	PI	BTH	Rot	H-E	38.6	41.5	...	...	16.7
Armstrong Sid. Cheetah Mk 17-Mk 27	Rad	Air	7-5.25x5.50	835	6.35	193	6.52	5	1	1	I	405	2425	4000	420‡	2550‡	310	2100	87	.732	805	1.99	1-Hob	FL	BTH	Rot	EM	49.6	47.7	47.7	...	25
Blackburn Cirrus Minor 2	IL	Air	4-3.94x5.00	243	6.25	125	...	5	1	1	I	100	2600	SL	92	2300	82	2300	73	Dir	234	2.34	1-Zen	FL	BTH	Rot	EM	38.4	30.6	17.4	11.62	...
Cirrus Major 2	IL	Air	4-4.72x5.50	386	5.80	125	...	5	1	1	I	150	2450	SL	138	2200	126	2200	70	Dir	327	2.18	1-Hob	FL	BTH	Rot	EM	43.2	32.2	18.36	10.87	...
Cirrus Major 3	IL	Air	4-4.72x5.50	386	6.50	129	...	5	1	1	I	156	2450	SL	146	2200	138	2200	80	Dir	333	2.15	1-Hob	FL	BTH	Rot	EM	43.2	32.2	18.36	10.87	...
Bombardier 702	IL	Air	4-4.80x5.50	398	7.00	138	...	5	1	1	OH	180	2600	SL	180	2600	158	2300	91/96	Dir	354	1.97	**	...	BTH	BTH	EM	45.26	31.14	19.0	12.3	...
Bristol Hercules 672	Rad	Air	14-5.75x6.50	2360	7.00	214	6.38	9♠	♦	♦	♦	1590	2500	5250	1690	2800	1320	2400	100/130	.444	1955	1.23	1-Hob	PI	BT-R	Rot	EM	40.9	52.0	...	...	30.3
Hercules 238	Rad	Air	14-5.75x6.50	2360	7.00	234	6.38	9•	♦	♦	♦	1670	2500	5000	2040	2800	1215	2400	100/130	.444	2145	1.33	1-Hob	PI	BT-R	Rot	EM	41.6	52.0	...	...	30.3
Hercules 634	Rad	Air	14-5.75x6.50	2360	7.00	214	6.38	9♠	♦	♦	♦	1510	2400	3750	1690	2800	1315	2400	100/130	.444	1945	1.29	1-Hob	PI	BT-R	Rot	EM	40.4	52.0	...	...	30.3
Hercules 733	Rad	Air	14-5.75x6.50	2360	7.00	246	6.38	9•	♦	♦	♦	1610	2400	3750	2040	2800	1215	2400	100/130	.444	2145†	1.33	1-Hob	PI	BT-R	Rot	EM	41.6	52.0	...	...	30.3
Hercules 763	Rad	Air	14-5.75x6.50	2360	7.00	243	6.64	9•	♦	♦	♦	1670	2500	5750	2100	2900	1215	2400	115/145	.444	2400†	1.44	1-Hob	PI	BT-R	Rot	EM	43.9	52.0	...	...	30.3
	2 Speed	Blower	...	...	...	...	8.30	...	...	...	...	1570	2500	16500			1130	2400														
Hercules 760	Rad	Air	14-5.75x6.50	2360	7.00	247	6.64	9♠	♦	♦	♦	1610	2400	3250	1980	2800	1130	2400	100/130	.444	2355	1.46	1-Hob	PI	BT-R	Rot	EM	43.5	52.0	...	...	30.3
	2 Speed	Blower	...	...	...	...	8.30	...	...	...	...	1540	2400	12250			1080	2400														
Centaurus 57	Rad	Air	18-5.75x7.00	3270	7.20	253	5.93	9♠	♦	♦	♦	2160	2400	5000	2810*	2700	1745	2400	100/130	.400	2830	1.31	1-Hob	PI	BT-R	Rot	EM	50.0	55.3	...	...	32.0
	2 Speed	Blower	...	...	...	...	7.78	...	...	...	...	1975	2400	15750	...	...	1600	2400	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Centaurus 661	Rad	Air	18-5.75x7.00	3270	7.20	235	5.72	9•	♦	♦	♦	2310	2400	4500	2700	2900	1750	2400	100/130	.400	3330§	1.44	1-Hob	PI	BT-R	Rot	EM	54.7	56.3	...	...	36.7
	2 Speed	Blower	...	...	...	...	6.77	...	...	...	...	2260	2400	12500	...	...	1720	2400	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Centaurus 663	Rad	Air	18-5.75x7.00	3270	...	248	6.62	9•	♦	♦	♦	2405	2400	7750	2810	2900	1830	2400	115/145	.400	3325§	1.38	1-Hob	PI	BT-R	Rot	EM	54.7	56.3	...	...	36.7
	2 Speed	Blower	...	...	...	...	7.82	...	...	...	...	2280	2400	16000	...	...	1745	2400	...	...	...	...	...	...	...	...	...	...	...	...	...	...
DeHav'lland Gipsy Major 10	IL	Air	4-4.64x5.51	373	6.00	121	...	5	1	1	I	145	2550	SL	145	2550	108	2300	80	...	318	2.20	1-Hob	FL	BTH	Rot	H-E	45.0^	30.62	20.0	9.0	21.28
Gipsy Major 10MK2	IL	Air	4-4.64x5.51	373	6.00	121	...	5	1	1	I	142	2400	3750	145	2550	142	2400	91/98	...	328	2.31	1-Hob	FL	BTH	Rot	H-E	45.4	30.6	20.0	9.0	21.28
Gipsy Major 50	IL	Air	4-4.73x5.91	414	6.50	144	11.163	5	1	1	I	180	2400	7000	197	2500	121	2100	87	...	404	2.24	H-I	PI	BT-R	Rot	EM	49.7^	32.24	17.65	11.03	21.28
Gipsy Queen 30	IL	Air	6-4.73x5.91	621	6.50	127	...	5	1	1	I	250	2500	SL	250	2500	180	2100	87	...	530	2.12	2-Hob	FL	BT-R	Rot	EM	56.3^	33.05	20.24	11.8	25.22
Gipsy Queen 50	IL	Air	6-4.73x5.91	621	6.50	143	11.163	5	1	1	I	272	2500	7000	295	2500	182	2100	87	...	560	2.07	H-I	PI	BT-R	Rot	EM	64.2^	33.05	19.63	11.8	25.22
Gipsy Queen 70	IL	Air	6-4.73x5.91	621	6.50	144	11.206	5	1	1	I	362	2800	5250	345	2800	275	2400	100	.7111	690	1.90	H-I	PI	BT-R	Rot	EM	71.7^	33.26	19.63	12.05	18.90
Gipsy Queen 70MK2	IL	Air	6-4.75x5.91	621	6.50	...	11.206		1	1	I	340	2700	6000	380	3000	340	2700	100	.7111	685	2.02	1-Hob	PI	BT-R	Rot	EM	71.75	33.26	19.63	12.05	18.90
Rolls-Royce Merlin 134-135	V-60	Liq	12-5.40x6.00	1649	6.00	285	5.79 (b)	2	2	2	OH	1780	3000	4500	1640	3000	1100	2650	100	.420	1720	.97	1-SU	PI	BT-R	BTH	EM	89.0	40.0	31.0	23.3	16.5
Merlin 140	V-60	Liq	12-5.40x6.00	1649	6.00	285	5.79 (b)	2	2	2	OH	1780	3000	4500	1725	3000	1200	2650	100	.512	1780	1.00	1-SU	PI	BT-R	Pls	Car	102	40.0	32.0	23.3	16.5
Merlin 500	V-60	Liq	12-5.40x6.00	1649	6.00	262	8.15 (a)	2	2	2	OH	1635	3000	2250	1610	3000	1080	2650	100	.420	1525	.93	...	FL	BT-R	BTH	EM	79.0	43.5	30.0	22.0	16.5
Merlin 620	V-60	Liq	12-5.40x6.00	1649	6.00	284	5.79 (b)	2	2	2	OH	1770	3000	4000	1725	3000	1160	2650	100	.470	1740	.98	1-SU	PI	BT-R	BTH	EM	86.0	43.5	31.5	23.3	16.5
Merlin 621	V-60	Liq	12-5.40x6.00	1649	6.00	284	5.79 (b)	2	2	2	OH	1770	3000	4000	1725	3000	1160	2650	100	.420	1740	.98	1-SU	PI	BT-R	BTH	EM	86.0	43.5	31.5	23.3	16.5
Griffon 74	V-60	Liq	12-6.00x6.60	2239	6.00	289	5.16 (e)	2	2	2	OH	2245	2750	9250	2020	2750	1310	2400	100/150	.451	2100	.93	1-Own	PI	BTH	Pls	Car	90.0	45.0	29.5	25.6	25
Merlin 622	V-60	Liq	12-5.40x6.00	1649	6.00	290	5.79 (b)	2	2	2	OH	1810	3000	4000	1760	3000	1175	2650	100	.471	1740	.96	1-SU	PI	Rot	BTH	EM	86.0	43.5	31.5	23.3	16.5
Merlin 623	V-60	Liq	12-5.40x6.00	1649	6.00	290	5.79 (b)	2	2	2	OH	1810	3000	4000	1760	3000	1175	2650	100	.420	1740	.96	1-SU	PI	Rot	BTH	EM	86.0	43.5	31.5	23.3	16.5
Merlin 624	V-60	Liq	12-5.40x6.00	1649	6.00	290	5.79 (b)	2	2	2	OH	1810	3000	4000	1760	3000	1175	2650	100	.420	1740	.96	1-SU	PI	Rot	BTH	EM	86.0	43.5	31.5	23.3	16.5
Merlin 626	V-60	Liq	12-5.40x6.00	1649	6.00	290	5.79 (b)	2	2	2	OH	1810	3000	4000	1760	3000	1175	2650	100	.420	1740	.96	1-SU	PI	Rot	BTH	EM	86.0	43.5	31.5	23.3	16.5
Griffon 57	V-60	Liq	12-6.00x6.60	2239	6.00	321*	6.61 (d)	2	2	2	OH	2030	2750	1750	2500*	2750	1380	2400	100/150	.442	2050	1.01	1-Own	PI	BTH	BTH	EM	103	41.2	31.8	25.6	25

ABBREVIATIONS

•—Data shown are for 501-1. Models 2, 3, and 4 vary only in propeller drive ratio and weights.
†—Includes Torquemeter, which increases weight by 45 lbs.
§—Includes Torquemeter, which increases weight by 55 lbs.
‡—Model Mk 27 has take-off of 475 at 2700.
♠—Aluminum cylinders with 2-piece heads.
•—Aluminum cylinders with copper-based heads.
♦—Sleeve valves, with one stainless steel sleeve per cylinder.
^—From propeller center line to rear of engine.
**—Direct injection to each cylinder.
*—With Water-Methanol injection.
2—Aluminum with steel liner.
5—Steel with Aluminum Head.
9—Aluminum Alloy.
(a)—Also 9.49 Blower Ratio.
(b)—Also 7.06 Blower Ratio.
(d)—Also 7.70 Blower Ratio.
(e)—Also 6.79 Blower Ratio.
BTH—British Thomas-Houston Co.
BT-R—British Thomas-Houston or Rotax.
Car—Cartridge.
Dir—Direct.
EM—Electric motor.
FL—Float.
H-E—Hand or electric motor.
H-I—Hobson injector.
Hob—H. M. Hobson Components, Ltd.
I—In head with push rods and rocker arms.
IL—In line.
Liq—Liquid
OH—Valves in head—overhead camshaft.
Pls—Plessey.
PI—Pressure Injection.
Rad—Radial.
Rot—Rotax, Ltd.
SL—Sea level.

For Directory of the Manufacturers listed above, see page 63.





cut operating costs, increase payloads —reduce weight or increase strength

with Inland HI-STEEL

Inland HI-STEEL's high strength-to-weight ratio and its abrasion and corrosion resistance permit longer life, weight reductions up to 25%, and greater strength than ordinary structural-grade carbon steel.

These properties permit three different approaches to the problems of design and construction:

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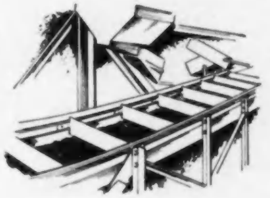
2. To design for greater strength with same weight and payload; and
3. To design for compromises that will allow variations of these qualities.

In each case operating costs of mobile equipment are greatly reduced.

And Inland HI-STEEL can be worked either hot or cold—punched, drawn or otherwise fabricated—welded or riveted—with little or no change in shop practice.

COMPARISON OF AVERAGE PROPERTIES OF HI-STEEL WITH ORDINARY STRUCTURAL GRADE CARBON STEEL

Tensile Properties (¼" Plate)	Inland HI-STEEL	Ordinary Structural Grade Carbon Steel
Yield Point (psi)	56,000	35,000
Ultimate Strength (psi)	73,000	66,000
Elong, in 8" (%)	25	25
Endurance Limit		
Fatigue Strength (psi)	49,000	33,000
Impact Resistance (Charpy Impact—ft. lbs.) Temperature		
80° F	55	36
32° F	43	33
0° F	36	26
—25° F	34	6
—50° F	30	2



INLAND STEEL COMPANY
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RAILS • TRACK ACCESSORIES.

DIRECTORY of MANUFACTURERS

Following are the company names and addresses of manufacturers whose products are listed in the tables of specifications of complete motor vehicles, tractors, aircraft, and all types of gasoline and Diesel engines appearing on pages 111 to 172 inclusive.

PASSENGER CARS

For details of their products see pages 113-124.

BUICK Motor Div., General Motors Corp., Flint 2, Mich.
CADILLAC Motor Car Div., General Motors Corp., Detroit 32, Mich.
CHEVROLET Motor Div., General Motors Corp., Detroit 2, Mich.
CHRYSLER Div., Chrysler Corp., Detroit 31, Mich.
CROSLEY Motors, Inc., Cincinnati 14, Ohio.
DE SOTO Div., Chrysler Corp., Detroit 31, Mich.
DODGE Div., Chrysler Corp., Detroit 31, Mich.
FORD Motor Co., Dearborn, Mich.
FRAZER, See Kaiser-Frazer Corp.
HUDSON Motor Car Co., Detroit 14, Mich.
KAISER-FRAZER Corp., Willow Run, Mich.
LINCOLN-MERCURY Div., Ford Motor Co., Detroit 32, Mich.
MERCURY, See Lincoln-Mercury Div., Ford Motor Co.
NASH Motors Div., Nash Kelvinator Corp., Detroit 32, Mich.
OLDSMOBILE Div., General Motors Corp., Lansing 21, Mich.
PACKARD Motor Car Co., Detroit 32, Mich.
PLYMOUTH Division, Chrysler Corp., Detroit 31, Mich.
PONTIAC Motor Div., General Motors Corp., Pontiac, Mich.
STUDEBAKER Corp., South Bend 27, Ind.
WILLYS-OVERLAND Motors, Inc., Toledo, Ohio.

TRUCKS

For details of their products see pages 125-132.

The AMERICAN-COLEMAN Co., Omaha 2, Neb.
AVAILABLE Truck Co., Chicago 47, Ill.
BIEDERMAN Motors Corp., Cincinnati 14, Ohio.
BROWN EQUIPMENT & Mfg. Co., New York 19, N. Y.
CHEVROLET Motor Div., General Motors Corp., Detroit 2, Mich.
The CORBITT CO., Henderson, N. C.
CROSLEY Motors, Inc., Cincinnati 25, Ohio.
DODGE Div., Chrysler Corp., Detroit 31, Mich.
DUPLEX Truck Co., Lansing 4, Mich.
FEDERAL Motor Truck Co., Detroit 9, Mich.
FORD Motor Co., Dearborn, Mich.
FOUR-WHEEL Drive Auto Co., Clintonville, Wisc.
KENWORTH Motor Truck Corp., Seattle 11, Wash.
LINN Coach & Truck Div., Great American Industries, Oneonta, N. Y.
MARMON-HERRINGTON Co., Indianapolis 7, Ind.
OSHKOSH Motor Truck Inc., Oshkosh, Wisc.
PETERBUILT Motor Co., Oakland, Calif.
REO Motors, Inc., Lansing 20, Mich.
STERLING Motors Co., Inc., Milwaukee 1, Wisc.
STUDEBAKER Corp., South Bend 27, Ind.
TRUCKSTELL, Inc., Cleveland 14, Ohio.
WALTER Motor Truck Co., Ridgewood, L. I., N. Y.
WARD LA FRANCE Truck Corp., Elmira, N. Y.
WILLYS-OVERLAND Motors, Inc., Toledo 1, Ohio.

ROTARY WING AIRCRAFT

For details of their products see page 133.

BELL Aircraft Corp., Buffalo 5, N. Y.
DOMAN Helicopters, Inc., Danbury, Conn.
KAMAN Aircraft Corp., Windsor Locks, Conn.
KELLETT Aircraft Corp., Helicopter Div., Camden 11, N. J.
McDONNEL Aircraft Corp., St. Louis 3, Mo.
PIASECKI Helicopter Corp., Morton, Penna.
SIKORSKY Aircraft Div., United Aircraft Corp., Bridgeport 1, Conn.
UNITED HELICOPTERS, Inc., Palo Alto, Calif.

AMERICAN COMMERCIAL & PRIVATE AIRCRAFT

For details of their products see pages 134 and 135.

AERONAUTICAL Div., Arkwin Corp., (Fairchild), Winfield, Kan.
AERONCA Aircraft Corp., Middletown, Ohio.
BAUMANN Aircraft Corp., Pacoima, Calif.
BEECH Aircraft Corp. (Beechcraft), Wichita 1, Kan.
BELLANCA Aircraft Corp., New Castle, Del.
BOEING AIRPLANE Co., Seattle 14, Wash.
CALL Aircraft Co. (Callair), Afton, Wyo.
CESSNA Aircraft Co., Wichita 15, Kan.
CONSOLIDATED VULTEE Aircraft Corp. (Convair), San Diego 12, Calif.
DOUGLAS Aircraft Co., Inc., Santa Monica, Calif.
FUNK Aircraft Co., Coffeyville, Kan.
GRUMMAN Aircraft Engineering Corp., Bethpage, L. I., N. Y.
LOCKHEED Aircraft Corp., Burbank, Calif.
The GLENN L. MARTIN Co., Baltimore 3, Md.
MONSTEAD-VINCENT Aeronautical Inc., New Orleans, La.
NORTHROP Aircraft, Inc., Hawthorne, Calif.
PIPER Aircraft Corp., Lock Haven, Penna.
ROSS Aircraft Corp., New York 17, N. Y.
RYAN Aeronautical Co., San Diego, Calif.
TEXAS Engineering & Mfg. Co., Inc. (Temco), Dallas 2, Tex.
THORP Aircraft Co., Pacoima, Calif.

AMERICAN INTEGRAL BUSES

For details of their products see pages 136 and 137.

ACF-BRILL Motors Co., Philadelphia 42, Penna.
BEAVER Metropolitan Coaches, Inc., Beaver Falls, Penna.
C. D. BECK & Co., Inc., Sidney, Ohio.
CUB Industries, Inc., White Pigeon, Mich.
FITZJOHN Coach Co., Muskegon, Mich.
FLXIBLE Co., Loudonville, Ohio.
General American AEROCOACH, East Chicago, Ind.
GMC TRUCK & Coach Div., General Motors Corp., Pontiac 11, Mich.
KALAMAZOO Coaches, Inc. (Kalamazoo & Pony (Cruiser), Kalamazoo 11, Mich.
MACK Manufacturing Corp., New York 1, N. Y.
REO Motors, Inc., Lansing 20, Mich.
SOUTHERN COACH Mfg. Co., Inc., Evergreen, Ala.
TRANSIT BUSES, Inc., Detroit 27, Mich.
TWIN COACH Co., Kent, Ohio.
WHITE Motor Co., Cleveland 1, Ohio.

AMERICAN TRACTORS

For details of their products see pages 138-141.

ALLIS-CHALMERS Mfg. Co., Milwaukee 1, Wisc.
B. F. AVERY & Sons Co., Louisville 8, Ky.
J. I. CASE Co., Racine, Wisc.
CATERPILLAR TRACTOR CO., Peoria 8, Ill.
The CORBITT Co., Henderson, N. C.
JOHN DEERE Waterloo Tractor Works, Deere Mfg. Co., Waterloo, Iowa.
EARTHMASTER Div., Adel Precision Products Corp., Burbank, Calif.
FATE-ROOT-HEATH Co. (Silver King), Plymouth, Ohio.
The FEDERAL Machine & Welder Co., Tractor Div. (Ustrac), Warren, Ohio
HARRY FERGUSON, Inc., Detroit 11, Mich.
FORD Motor Co., Dearborn, Mich.
FRIDAY TRACTOR CO., Hartford, Mich.
GIBSON Manufacturing Corp., Longmont, Colo.
INTERNATIONAL HARVESTER Co., Chicago 1, Ill.
MASSEY-HARRIS Co., Racine, Wisc.
MINNEAPOLIS - MOLINE Co. (M - M), Minneapolis 1, Minn.
NATIONAL Iron Works (Lincoln), San Diego, Calif.
The OLIVER Corp., Charles City, Iowa.
The OLIVER Corp., Industrial Div. (Cle-Trac), Cleveland 17, Ohio.
PIEDMONT Tractor Div., Inexco Corp., (Tiger), Fort Lee, N. J.

AMERICAN GASOLINE ENGINES

For details of their products see pages 142-151.

AIRCOOLED Motors, Inc. (Franklin), Syracuse, N. Y.
ALLIS-CHALMERS Mfg. Co., Milwaukee 1, Wisc.
The AUTOCAR Co., Ardmore, Penna.
BRENNAN Motor Mfg. Co., Syracuse 2, N. Y.
The BUDA Co., Harvey, Ill.
BUFFALO Gasoline Motor Co., Buffalo 7, N. Y.
CHEVROLET-Central Office Div., General Motors Corp., Detroit 2, Mich.
CHRIS-CRAFT Corp., Algonac, Mich.

(Turn to page 302, please)

Riveting

as Applied to

Aircraft Production

By E. O. Baumgarten

Production Design Engineer
North American Aviation, Inc.

ADVANCES in metallurgy, increasing aerodynamic and structural demands, and the introduction of new products by the competitive accessories industries necessitate reevaluation of the methods used in the rivet joining of sheet metal parts. Since a great percentage of airplane manufacturing cost is involved in the riveting together of the formed sheet metal parts into an integrated airframe, it is obvious that here is a fertile field in which to reduce man-hours and accelerate production.

Mechanical assembly of an airplane is accomplished primarily by rivets and bolt-nut units, secondarily by screws and cowl fasteners, and lastly by latches and stitching. By far the most time consuming is the preparation for, and upsetting of, the 100,000 or so rivets which are in a typical fighter aircraft. It is the designer's responsibility to know his riveting and especially to be aware of the economies resulting from the use of automatic riveting machines.

Riveting machines which punch or drill their own holes, dimple or countersink them, and feed and upset the rivet, produce finished riveted joints up to 10 times as quickly as the other accepted means of riveting assembly. The rivet quality is increased considerably, inspection rejections being at a minimum when these machines are employed. Consequently, the more of his design that he releases for automatic machines the more the designer contributes to lowered cost and accelerated production rate of his project. Progress has been made on succeeding models toward utilizing this feature, but increasing use of the automatic machine's high output is recommended.

In double countersink operations the material must be thick enough to allow standard size countersinking without increasing the hole diameter.

Types of Rivets and Selection

While there are many types of special rivets available, those that play the largest part in production are the conventional 100 deg flush head AN426 and the recently standardized universal head AN470. The latter incorporates the features of, and supersedes for design and procurement, the brazier head rivets 2R1 (North American Standard) and AN456, the round head AN430, and the flat head AN442. Riveting sets formerly used for brazier head 2R1 rivets are usable with the AN470 universal head. The reverse, however, is not permissible. Other important, though less numerous, rivets are the Hi-Shear type with drive-formed locking collar, and the blind rivets used in otherwise inaccessible locations.

When selecting a rivet, consideration must be given to the following:

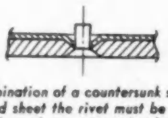
1. Its function.
2. Strength of rivet required.
3. Surface finish (whether flush).
4. Specifications governing its use.
5. Material being joined.
6. Material of the rivet.
7. Accessibility.

Conventional Rivets

The conventional AN standard flush and protruding head rivets are handled by all the automatic machines which punch their holes, countersink or dimple, and feed and upset the rivet; by the semi automatic machines which feed and upset the rivet; by stationary squeezers, used to upset hand fed rivets; and by portable squeezers and pneumatic hammers. These machines are described herewith.

Attention has recently been directed to the several design considerations involving conventional rivets as noted below.

1. Good practice when designing for the riveting of plastic sheet parts is to maintain drafting room manual specified edge distances and drill sizes, use soft rivets if possible and place the upset formed head against the harder material. Cracks might otherwise occur when riveting the plastic.



In a combination of a countersunk sheet and a dimpled sheet the rivet must be installed from the countersunk side.

2. Double flushing is poor practice and should be avoided, but in certain instances is a necessity, such as at wing trailing edges. In double countersink applications the material must be thick enough to allow standard size countersinking without increasing the hole diameter.

The rivet shank must be supported when riveting tubes.

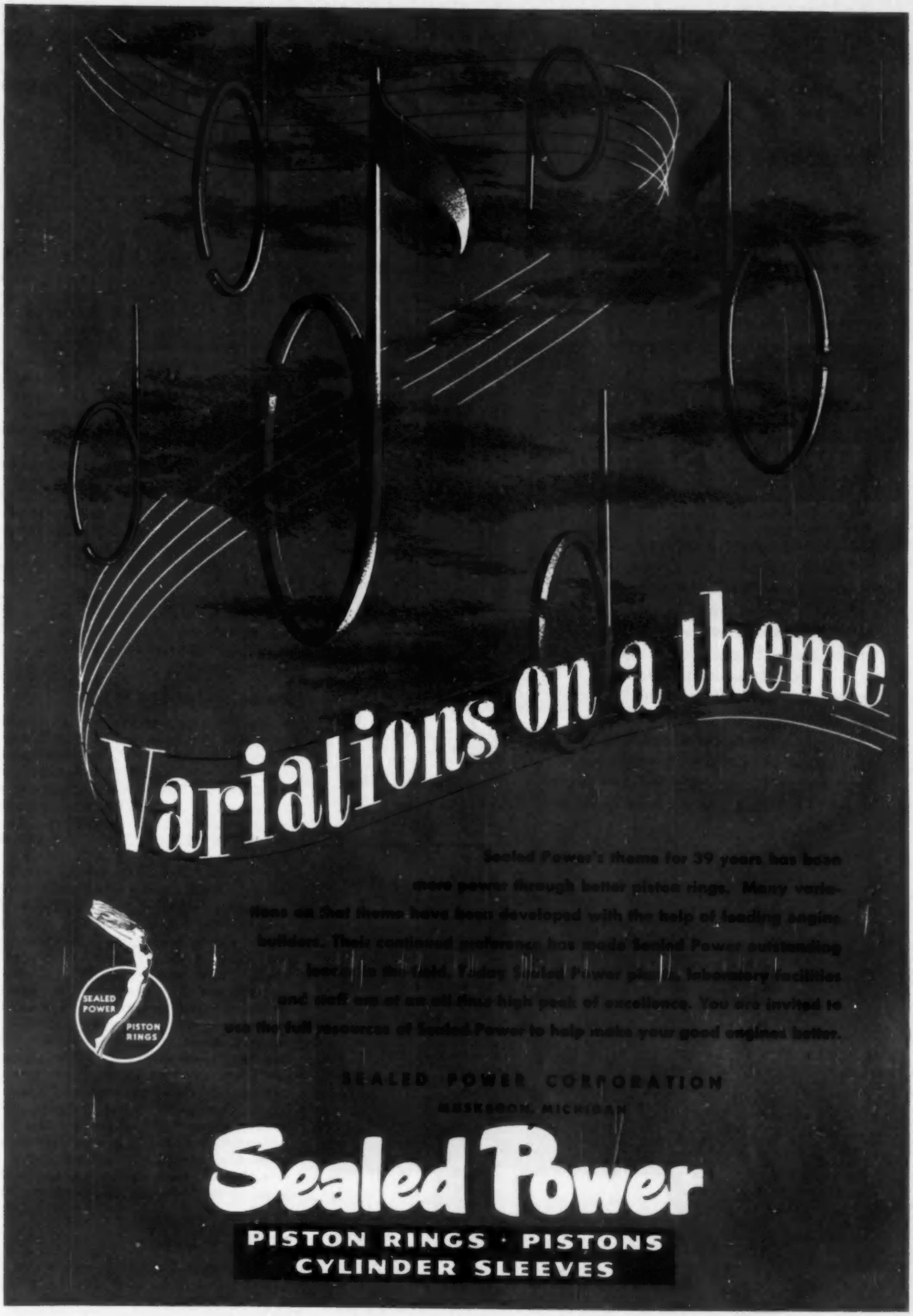
In a combination of a countersunk sheet and a dimpled sheet, the rivet must be installed from the countersunk side minimizing dimple deformation and allowing a control of the size of the countersunk head.

Spotwelding is often the preferable method of joining thin double flush sheets.

3. When riveting tubes, the rivet shank must be supported to prevent its buckling between walls. The rivet head should not be contoured to the tube periphery, especially on blind rivets for, since there is little or no hole filling by swelling for support, the hammering when contouring loosens the rivet. Rivet heads often crack away due to the contouring.

4. Butted skin sheets should have ample edge distance for dimpling or for riveting so that swelling due to these operations will not cause the skins to come together and buckle. While it is standard procedure for the shop to provide a gap between sheets when fabricating, it may be insufficient to prevent buckling when the joint is being made. Edge distances should be sufficient to preclude this condition. A major problem in riveting production is sheet

(*Turn to page 265, please*)


Variations on a theme
Sealed Power's theme for 39 years has been more power through better piston rings. Many variations on that theme have been developed with the help of leading engine builders. Their continued preference has made Sealed Power outstanding leader in the field. Today Sealed Power plants, laboratory facilities and staff are at an all-time high peak of excellence. You are invited to use the full resources of Sealed Power to help make your good engines better.
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AIRBRIEFS

By ROBERT McLARREN

Flying Hunter-Killer Teams

Grumman Aircraft Engineering Corp. has taken seriously one of the oldest gags in the design room and with profitable results. Through the years, when the design room gang first looked over a circular proposal and noted with awe the long list of requirements, one designer was certain to suggest "Let's build two airplanes, one to carry the equipment, the other to carry the disposable load," which usually brought down the house. But Grumman has done just that in its AF-2 Guardian Navy attack plane. The model AF-2W is equipped as a search plane, loaded with radar, to seek out enemy submarines. The model AF-2S is equipped as an anti-submarine bomber to drop depth charges and bombs. The result is a sky-going hunter-killer anti-submarine team that is revolutionizing a lot of the thinking about how to deal with the submarine menace. The wartime hunter-killer team used only one airborne partner, either a blimp or a Convair PBY flying boat to spot enemy subs either visually or through radar. Close by was a destroyer or DE ready to heave depth charges and/or five-in. shells. Experience with aircraft rockets has proved that an airplane can deliver a heavier broadside with five-in. and 11.75-in. rockets than can a destroyer, although the aircraft is a one-shot affair. The Navy has ordered 95 Grumman AF planes, enough for 45 hunter-killer teams, carrier-borne and long-ranged.

Barrier Ripped to Shreds

We are becoming accustomed to the idea that airplanes can fly faster than sound, which the Air Force claims they are doing "every day," and that the old-fashioned sonic barrier just isn't a barrier any longer. But somehow it's a little startling to learn that Capt. Charles E. Yeager, famed supersonic pilot, has done a lot of stunt flying at supersonic speed. The precise NACA annual report reveals that "Data have also been obtained for rudder-fixed aileron rolls (on the Bell X-1) at high Mach numbers." From other sources we know that Yeager has looped, stalled and spun the X-1, if not at supersonic speed, at a speed dropping from an initial supersonic one when the maneuver was commenced. Maneuvers at supersonic speed are hardly stunt flying to the scores of scientists and technicians interpreting the data recorded and transmitted during the research flights, for such is the purpose of the X-1 and its companion research airplanes. But such revelations create the distinct impression that the sonic barrier has not only been pierced, it has been ripped to shreds.

Making It Legal

Speaking of the NACA, we were surprised to learn the other day that after

(*Turn to page 292, please*)

Publications AVAILABLE

New Industrial Literature listed in this department is obtainable by subscribers through the Editorial Department of AUTOMOTIVE INDUSTRIES. In making requests please be sure to give the NUMBER of the item concerning the publication desired, your name and address, company connection and title.

H-66 Driv-Lok Pins

The Driv-Lok Pin Company—A 16-page booklet describes, lists and illustrates the company's line of Driv-Lok pins which are made in a wide variety of sizes, types and materials. The booklet contains many illustrations and drawings and also lists the various features and general specifications of the pins.

H-67 Plastics Molding Equipment

The Hydraulic Press Mfg. Co.—"Profits From Plastics" is the title of a new booklet available from the company. It pictorially illustrates and describes a series of H-P-M injection and compression machine installations in the plastics molding industry and tells of the production experiences of a number of manufacturers. A group of typical H-P-M installations is shown in the booklet.

H-68 Safety Feeder

F. J. Littell Machine Co.—The Press-Vac Safety Feeder, a device that produces a vacuum by passing compressed air through a venturi, is described in a new 4-page, 2-color folder.

H-69 Centering Reels

F. J. Littell Machine Co.—A new 4-page, 2-color folder describing and illustrating their Standard Automatic Centering Reels, for holding coils from 300 pounds to 6000 pounds, is available.

H-70 Silicone Compound

Dow Corning Corp.—A new 16-page booklet describes and illustrates some of the many aircraft and electronic applications for DC 4, a non-melting, waterproofing and insulating silicone compound. Physical properties, dielectric properties and specifications are included in the booklet.

H-71 Welding Alloy for Aluminum

Eutetic Welding Alloys Corp.—A new, 2-color descriptive folder on developments in aluminum welding metallurgy includes procedural and technical data, and a list of alternate Eutetic Alloys for the welding of aluminum sheet to aluminum castings, etc.

H-72 Flash Butt Welding

The American Welding & Mfg. Co.—Advantages of flash butt welding by controlled techniques and typical product applications are shown in a new illustrated 20-page booklet just published. Products and subassemblies in various sizes are described. Featured are copper, aluminum, carbon steel, superstrength alloys, forgings, and cast iron as metals which have been successfully flash butt welded into products for many industries.

H-73 Antifriction Bearing Standard

American Standards Assoc.—A new 12-page American Standard on "Gaging Practices for Ball and Roller Bearings" is announced. It is No. B3-4, 1950 and can be obtained by writing the Association at 70 East 45th Street, New York 17. Copies are *50 cents each.*

H-74 Aluminum Casting Alloys

American Smelting and Refining Co., Federated Metals Div.—A new 40-page

TIME SAVER COUPON

THIS TIME SAVER COUPON is for your convenience in obtaining, WITHOUT OBLIGATION, more information on any one or more of the publications described above OR New Production and Plant Equipment OR New Products items described on other pages.

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Correct gasket compression needed for effective sealing

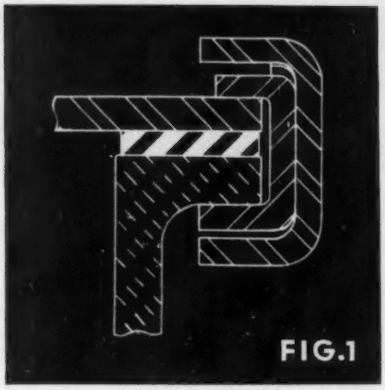

FIG.1

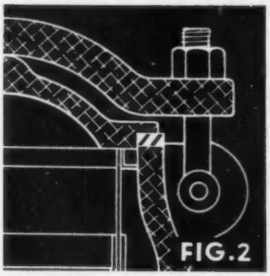

FIG.2

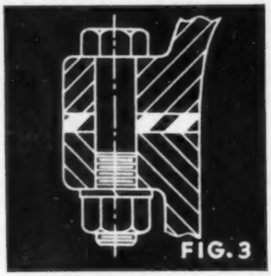

FIG.3

Resilient gaskets seal most effectively when correctly compressed. To insure correct compression, gasket compressibility should correspond to the flange pressure encountered in service. Otherwise, the gasket may be overcompressed and strained by excessive pressure or fail to seal properly because of insufficient pressure.

Correct compression can be achieved on many applications by using gaskets made from an Armstrong's Cork-and-Rubber Composition. Because cork-and-rubber is compounded of highly compressible cork particles and synthetic rubber of various durometer hardnesses, it offers a co-ordinated range of compressibilities capable of sealing effectively under widely varying flange pressures. Hence, choosing a cork-and-rubber material according to the application flange pressure eliminates faulty seals caused by incorrect compression.

Beside offering a wide range of compressibilities, cork-and-rubber provides exceptional resistance to most fluids and solvents. Depending on the substance being sealed, cork-and-rubber compositions made from Buna N, Neoprene, Thiokol, or other synthetic polymers are used.

Typical of the diverse sealing problems solved by cork-and-rubber are the three applications shown here.

In figure 1, a soft Cork-and-Neoprene material compresses 25% under 100 p.s.i. to make the glass cover of a watt-hour meter weather-tight.

A firm Cork-and-Thiokol composition was used to seal an aromatic fuel dispenser in figure 2. Here 500 p.s.i. produced 25% compression.

The 1500 p.s.i. bolt pressure available on the gate valve flange (figure 3) compressed a still firmer Cork-and-Neoprene material the recommended 25%.

Further information on correct gasket compression is available on pages 16 and 19 of the booklet offered below. Write for it today or call your Armstrong representative for further particulars.

Send for this Gasket Handbook

You'll find useful application and specification data in the revised 24-page booklet, "Armstrong's Gasket and Sealing Materials." It contains up-to-date information on straight synthetic rubber, cork-and-synthetic-rubber, and cork composition gasket and sealing materials.

This booklet includes ten technical discussions of the factors influencing modern gasket and joint design. It also suggests methods of putting Armstrong's stock materials to specialized uses in such fields as radio, electrical, automotive, petroleum, and transportation industries.

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illustrated booklet, "Aluminum Casting Alloys" contains sections on pouring, shrinkage, dross control, solution treating, aging, stress relief, corrosion, etc. The metallurgy of aluminum casting alloys is described in detail with explanations of how these types are affected by copper, silicon, magnesium, iron, zinc, nickel, etc. A complete tabulation of 45 sand, permanent mold and die casting alloys' specifications includes nominal compositions, mechanical properties and industrial properties.

H-75 Metal Treating Data Sheets

Heatbath Corp.—Technical Data for Metal Treating Products and Metal Finishing Products is the title of a new folder available on request. These data sheets describe the Heatbath line of salt baths for the heat treatment of metals.

H-76 Welders

Westinghouse Electric Corp.—Booklet DB 26-100 describes the new 200, 300 and 400 ampere, 60-per cent duty cycle, selenium rectifier d-c welders. Engineering information is included, relative power costs, performance characteristics, construction details, welding and electrical characteristics, dimensions and weights.

H-77 Industrial Plastic

Westinghouse Electric Corp.—Copies of the recently revised 36-page Micarta Data Book are available. The book is intended for the designer and user of industrial materials and presents clearly and completely the technical facts about Micarta. The grades and forms in which Micarta is supplied are tabulated, together with chemical, mechanical and electrical properties of each. Standard shapes and sizes available are listed, and a description of finishes is included.

H-78 Plastics

Union Carbide & Carbon Corp., Bakelite Div.—Bakelite in Review is the title of a special edition of Bakelite Review which commemorates the company's 40th anniversary. The progress of the division is fully covered and photographs show the extensive Bakelite plant facilities and intricate equipment required for large-scale production of plastics. The Review concludes with a summary of the major developments in Bakelite and Vinylite plastics during the past year.

H-79 Lubricating Systems

Universal Lubricating Systems, Inc. —"Universal" precision lubricating equipment is illustrated and described in a new 20-page catalog. Universal's grease fittings, drain plugs, hydraulic couplers, adapters, fitting tools, pressure guns, spring lubricators, control valves, etc., are included. Various display and dispensing units are also illustrated and described.

Magnesium Developments During 1949

THE following firsts were registered by magnesium last year, according to *The Magazine of Magnesium:*

Magnesium clutches used for large presses manufactured by Lima-Hamilton Corp.

Fruehauf Trailer Co. and Highway Trailer Co. both adopted extruded magnesium floors for use in trailers.

Magnesium radar trailers were developed and built.

Magnesium die castings first used on automobile production models by Buick.

Magnesium-zirconium alloy castings produced commercially by Howard Foundries.

ZK-60 extrusions made commercially by Dow.

A modified phenol - formaldehyde chromate primer developed by Princeton Paint Laboratories for use on bare, untreated magnesium.

Magnesium data published in ANC-5a "Strength of Aircraft Elements," recognizing magnesium as a major aircraft structural material.

Business in Brief

Written by the Guaranty Trust Co., New York, Exclusively for AUTOMOTIVE INDUSTRIES.

General business activity declined slightly during the week ended Feb. 18. Department store sales, electric power production, railway freight loadings, and bituminous coal production were lower than in the preceding week, while crude oil output and construction increased. The *New York Times* index of activity for the week ended Feb. 18 stands at 148.7, as compared with 149.3 in the preceding week and 148.8 a year ago.

Sales of department stores during the week ended Feb. 18, as reported by the Federal Reserve Board, equaled 231 per cent of the 1935-39 average, as compared with 238 in the week before. Sales were one per cent above the corresponding distribution in 1949, and the total in 1950 so far reported was four per cent less than the comparable sum in 1949.

Electric power production registered a seasonal decline during the week ended Feb. 18. The output was 5.0 per cent above the corresponding amount in 1949, as compared with an advance of 4.3 per cent shown for the preceding week.

Railway freight loadings during the same period totaled 560,116 cars, 1.5 per cent less than the figure for the week before and 19.7 per cent below the corresponding number recorded in 1949.

Crude oil production in the week ended Feb. 18 averaged 4,996,850 barrels daily, 45,600 more than in the preceding week and 421,450 under the comparable output a year ago.

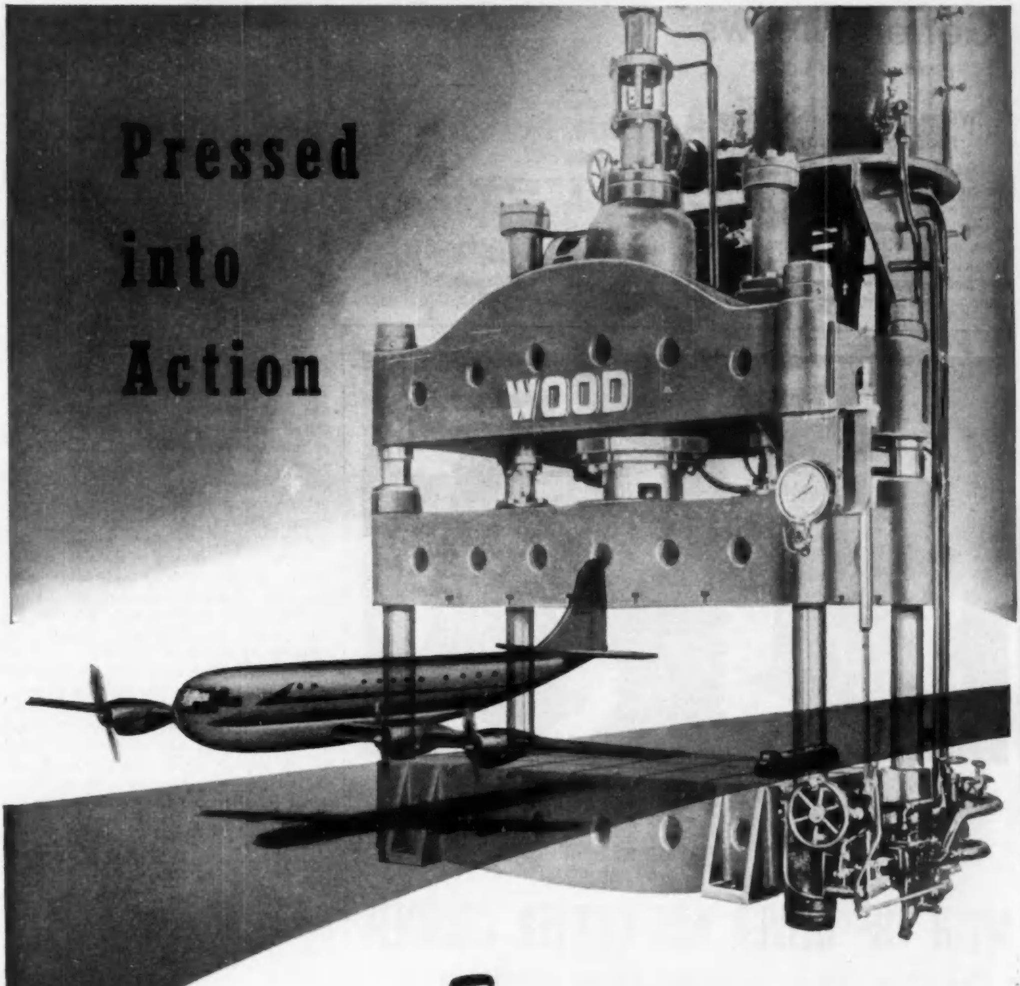
Production of bituminous coal and lignite during the same week is estimated at 2,425,000 net tons, 75,000 less than the output in the week before and 8,430,000 below the corresponding quantity in 1949.

Civil engineering construction volume reported for the week ended Feb. 23, according to *Engineering News-Record*, was $263,585,000, or 120 per cent more than the preceding weekly figure and 249 per cent above the comparable sum in 1949. The total recorded for eight weeks of this year was 42 per cent more than the corresponding amount in 1949. Private construction for the period was 39 per cent above that a year ago, and public construction increased by 45 per cent.

The wholesale price index of the Bureau of Labor Statistics during the week ended Feb. 21, at 152.5 per cent of the 1926 average, was 0.2 per cent more than in the preceding week but was 3.8 per cent below the corresponding figure in 1949.

Member bank reserve balances decreased $224 million during the six-day period ended Feb. 21. Underlying changes thus reflected include a decrease of $489 million in Reserve bank credit and increases of $26 million in money in circulation and $3 million in non-member deposits and other Federal Reserve accounts, accompanied by decreases of $291 million in Treasury deposits with Federal Reserve banks and $2 million in Treasury cash.

Total loans and investments of reporting member banks declined $162 million during the week ended Feb. 15. An advance of $14 million in commercial, industrial, and agricultural loans was recorded. The sum of these business loans, $13,899 million, shows a net decrease of $1366 million in 12 months.



This R. D. Wood hydraulic press translates designers' dreams into machines of motion. Out of its jaws come formed components for aircraft and automobiles—pressed accurately, uniformly. The R. D. Wood Company, known in industry for equipment of quality since 1803, makes an entire range of hydraulic presses for *all* metalworking operations. Write for the R. D. Wood catalog.

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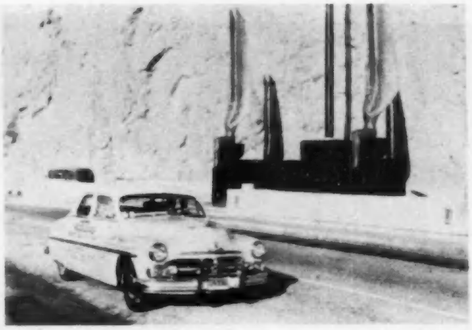
EST. 1803 *R. D. Wood Company*

General News

(*Continued from page 67*)

Willys Develops New Deep Fording Jeep for Army

Retaining the basic characteristics of the present Jeep, and capable of being operated in both fresh and salt water, a new U. S. Army MC Deep Fording Jeep, manufactured by Willys-Overland Motors, Inc., is designed to meet Army Ordnance requirements which include complete waterproofing of the four-cyl engine and all of the electrical system. The six main features of the MC Jeep are deep fording provisions, 24-v electrical system, radio suppression, ease of maintenance, arctic and hot climate operation, and standardization. Two valves are provided in the crankcase ventilation system. When the Jeep is driven on dry land, the valves are in the open position, allowing the engine to build up a vacuum in the crankcase. However, when the engine is driven under water the valves are closed, allowing the engine to build up a pressure in the crankcase which aids in keeping water out. To further insure against leakage, newly designed crankshaft seals are installed both front and rear and a water-proofed oil bath air cleaner is provided. Long pipes which are provided for intake air and exhaust gas of the engine make possible operation of the Jeep under water to a depth which completely submerges the vehicle. Special venting is accomplished by connecting all vent lines to the main air intake pipe. The main units which have been vented are the carburetor float chamber, fuel tank, front and rear axles, brake master cylinder, distributor, windshield wipers, transmission and transfer case.



WINNER!

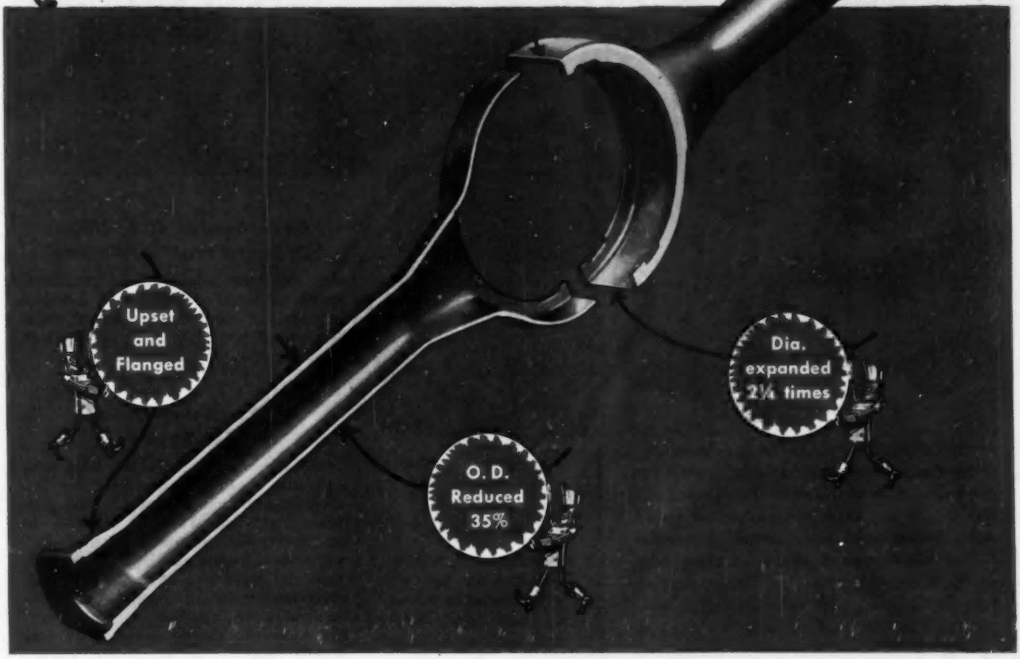
The Mercury pictured above crossing Hoover Dam is the Sweepstakes winner of the 1950 Mobilgas Grand Canyon Run. The car won the award for its high ton-mile rated performance to not only capture the Sweepstakes but to also win Class D in the event. It averaged 26.5 mpg.

GM Study Shows Increase in New Car Market

Figures obtained in a study made for GM by the Survey Research Center show that the number of families financially able to buy an automobile is now 50 per cent greater than it was before the war. According to W. F. Hufstader, GM vice president in charge of distribution, the survey shows that 12 million families are now able to purchase a new automobile, compared with eight million before the war. The study brought out some interesting data about income groups and car ownesrhip. It revealed that as of Jan. 1, 1949, about 2.5 million families earned $7500 or more a year. Of these, 1.6 million, or 64 per cent, own cars which they purchased new; 500,000, or 20 per cent, own cars they purchased as used cars.

(*Turn to page* 188, *please*)

This Rear Axle Housing Requires a Tube That Can Take It!



Each half of the rear axle housing above is made from a single 4½" O.D. "Standard" electric weld tube reduced approximately 35% in diameter—hot upset and flanged at one end with an increase in wall thickness of about 50%. The opposite end is then fabricated to a half-circle channeled "banjo" section with a diameter 2¼ times the original tube diameter. For a tube that is to receive the most difficult fabrication—

Specify "STANDARD"—*It Pays!*

Sizes ½" O. D. to 5½" O.D., .028" to .260" Wall.

General News

(Continued from page 186)

and 400,000, or 16 per cent, did not own a car. Of 5.3 million families making \$5000-\$7500 a year, 2.2 million, or 41 per cent, own cars which they purchased new; 2 million, or 38 per cent, own cars they purchased as used cars; and 1.1 million, or 21 per cent, didn't own a car. Of 8.9 million families with incomes between \$3000 and \$4000 a year, 2 million, or 22 per cent, owned new cars; 3.9 million, or 44 per cent, owned used cars; and 3 million, or 34 per cent, were non-owners. Families earning between \$2000 and \$3000 a year totaled 9.8 million. Of these, there were 1 million new car owners, 3.9 million used car owners and 4.9 million who didn't own a car.

Army Awards \$352,000 in New Contracts

New Army contracts include orders to United Auto Parts Co. of Kansas City for 675 80 by 144 in. steel cargo bodies for \$219,375. A contract was also awarded to Willys-Overland Motors, Inc., for \$132,678 worth of spare parts.

Navy Awards \$9.8 Million Order to Pratt & Whitney

A contract amounting to \$9.8 million worth of model J-42-P-8 and J-48-P-6 engines has been awarded the Pratt & Whitney Aircraft Div., United Aircraft Corp. by the Navy Dept.

AAA to Sanction Stock Car Racing

Stock-car racing under the AAA banner will again be sanctioned by the association's contest board. The participating cars will be confined to models "in current production and sale" with closed bodies and hard tops. AAA stock-car races will be sanctioned only on mile tracks or longer "where a creditable stock car race can be held under approved racing conditions," and staged "only by an accredited promoter," according to an association spokesman.

Ford May Build New Central Offices

The Ford Motor Co. is considering the construction of a new administration building somewhere in Dearborn. A detailed announcement of plans for such a building will be forthcoming within a few months. It is understood that it will be constructed on land now owned by the company in or near Dearborn.

(Turn to page 192, please)

A handy guide to ALLOY STEELS

HERE for ready reference are listed the various grades of U·S·S Carilloy constructional alloy steels available for use in automotive, truck and farm implement parts.

The grades shown for each application or part are not necessarily the only grades suited for a particular purpose, but are rather those grades most commonly used.

It is obvious that design, economy, machining facilities, availability of heat treating equipment and other factors will enter into your final selection of the alloy grade best suited for your particular purpose. To get optimum results from these steels, we suggest that you obtain expert advice both in selecting and applying them. This we are prepared to furnish.

Our staff of service metallurgists is always ready to study individual problems and to assist you with practical recommendations that you will find extremely helpful not only in determining what grade of U·S·S Carilloy will do the best job for you, but in showing how it can be handled most efficiently in your shop.

CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH AND CHICAGO
COLUMBIA STEEL COMPANY, SAN FRANCISCO
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM
UNITED STATES STEEL SUPPLY COMPANY, WAREHOUSE DISTRIBUTORS, COAST TO COAST
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

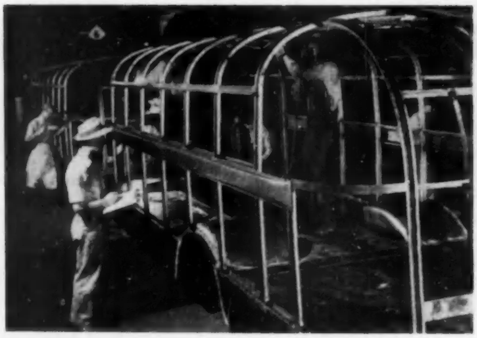
	AUTOMOBILE, LIGHT TRUCK, TRACTOR						HEAVY TRUCK	DIESEL ENGINE
	Arms and Knuckles		Axles and Shafts		Universal Joints	Sway Eliminator Bars	Crank Shafts	Crank Shafts
Tensile Strength Range, psi.	125,000 to 165,000	150,000 to 200,000	150,000 to 200,000	175,000 to 225,000	125,000 to 175,000 (Core)	140,000 to 170,000	140,000 to 170,000	100,000 to 125,000
Mn	1340		1330	1340				
Ni Cr	3130, 3135, 3140		3140, 3145					
Mo	4047, 4053		4063, 4068			4068		
Cr Mo	4135, 4142,		4140, 4145, 4150			4140	4142	
Ni Cr Mo		4337, 4340		4340, 4345	4317, 4320		4340	
Ni Mo			4640		4617, 4620			
Cr	5132				5120	5145, 5150, 5160	5145	5046, 5145
Ni Cr Mo	8640, 8642, 8645		8640, 8650	8653	8650			
	8740, 8742		8740, 8750		8720			
		9840		9840, 9845				

	STEERING WORM AND SECTORS		OVERDRIVE CASES	PISTON PIN BUSHINGS	INTAKE VALVES	PUMP SHAFTS	COUNTERSHAFT AND OTHER PINS	
Tensile Strength Range, psi	115,000 to 160,000 (Core)	175,000 to 250,000	150,000 to 190,000 (Core)	115,000 to 160,000 (Core)	125,000 to 160,000	125,000 to 160,000 (Core)	125,000 to 160,000 (Core)	175,000 to 240,000
Ni Cr					3140			
Cr Mo					4140			4130, 4140
Ni Mo	4620					4620	4620	
			4820					
Mo							4027, 4032	
Cr	5120	5132, 5135		5120			5120	5135, 5140
Cr V				6120				
Ni Cr Mo	8620						8620	
	8720				8740			
Cr Mo Al						Nitriding Steel		

CARNEGIE-ILLINOIS STEEL CORPORATION

General News

(*Continued from page* 188)



On the production line at Ward Body Works, Inc., Conway, Ark., these all-welded frameworks of Otiscoloy high-strength steel, made by the Jones & Laughlin Steel Corp., are the skeletons for school bus bodies. Exterior panels are riveted on. Ward has the capacity to produce 100 bodies a week.

K-F Appoints New Sales Manager

The Kaiser-Frazer Corp. has announced the appointment of Steve Girard as general sales manager. He has been a vice president of K-F Export Corp. since 1946, representing the company at its assembly affiliate in Rotterdam, Holland. Before joining K-F at its Long Beach operation, he had been affiliated with the Kaiser interests since 1938.

Public Roads Bureau Completing Brake Research Program

The initial field work of the Bureau of Public Roads cooperative program of brake research is in the home stretch. Phase one, involving tests on vehicles selected at random from the general traffic, has been completed. This phase covered some 1200 vehicles in Maryland, California, and Michigan. The data is now being analyzed by the Bureau, and it is likely that a report will be issued before the rest of the work is completed. This data will be comparable with the Bureau's prewar studies.

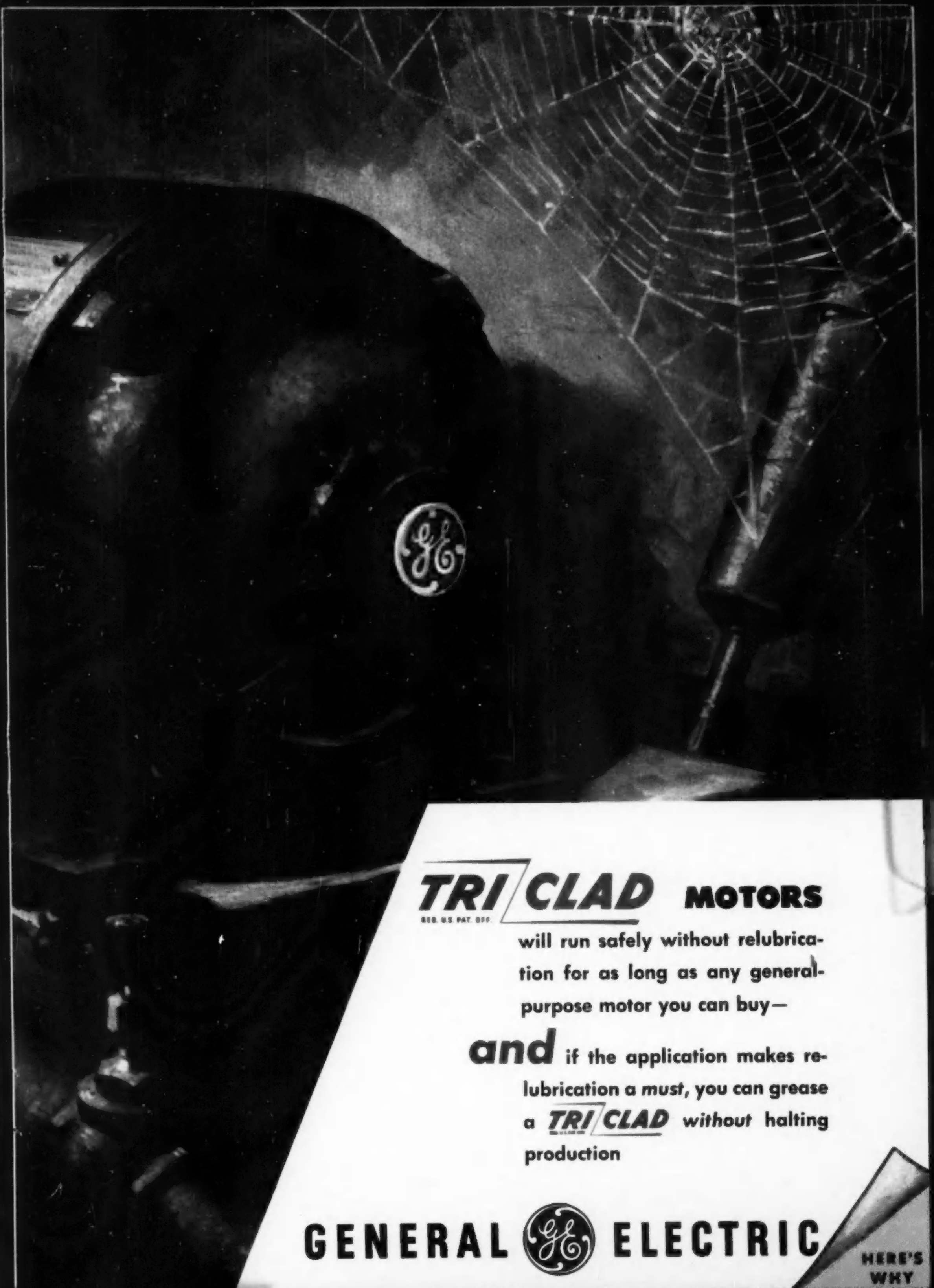
On the newer portions of the research program, work is progressing rapidly. Phase three tests, controlled tests on used commercial vehicles, will probably be completed by late summer. These tests have been finished in the West Coast, with 20 truck operators cooperating in the work. The Southeastern area is now the locale of this phase. The tests will move into the Eastern states by early spring and into the Midwest during the summer.

Phase two tests, new commercial vehicles, are being conducted by the Automobile Manufacturers Association's Brake Technical Committee, using the same test procedures as those established for the other phases. The data obtained will be correlated with the results of tests on phases one and three by the Bureau of Public Roads.

Hope Grows for Slash in Automotive Taxes

Since presentation by George Romney, Nash-Kelvinator vice president, of the automobile industry's request for repeal of excise taxes on automobiles, trucks, repair parts, tires and tubes, and gasoline and oil, optimism in the industry has picked up. The belief is that something may be done to reduce the excise levies, at least, and there is some thought that chances are good for repeal of the war-time excise

(*Turn to page* 195, *please*)


TRI CLAD MOTORS
REG. U.S. PAT. OFF.
will run safely without relubrication for as long as any general-purpose motor you can buy—
and if the application makes relubrication a must, you can grease a TRI CLAD without halting production
GENERAL ELECTRIC
HERE'S WHY

General News

(*Continued from page* 192)

taxes which would mean a reduction of about 50 per cent so far as the automobile industry is concerned. Reception by the Congressional committee to Mr. Romney's presentation was said to be favorable and the committee asked for a documented breakdown of the $500 in taxes which Mr. Romney says is imposed on a $2000 automobile. He said that the excise tax alone amounts to $95 on the average new car and about $76 on a truck. Mr. Romney pointed out that employment in the automobile industry is highly sensitive to sales and that the nation now would be in the middle of an unemployment crisis if the automobile industry's employment had been reduced to the same extent as that in some of the luxury industries where excise taxes are now admitted to be the basic cause of unemployment. He urged that action be taken now before it is too late.

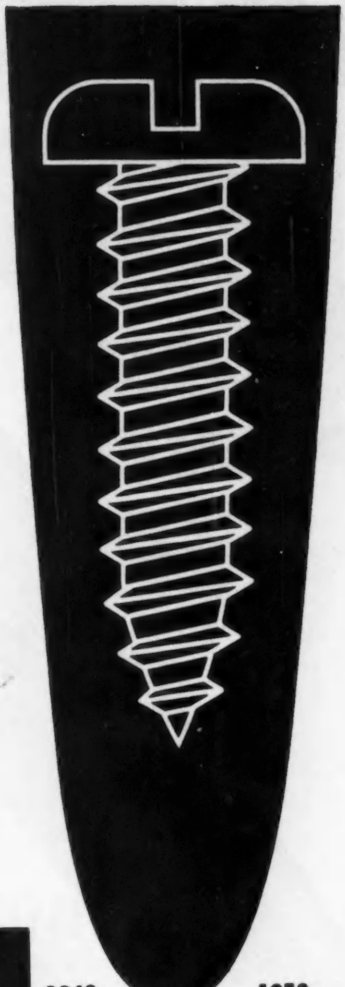
Name C. G. Wood Vice President of Karyall Body

Clarence G. Wood who resigned as director of sales for the American Coach & Body Co., Cleveland, O., last October, has just acquired a substantial stock interest in Karyall Body, Inc., Cleveland, O. He has been elected a member of the board of directors and vice-president, and will direct the sales activities for his company. Karyall Body, Inc., which was formerly the W.V.G. Sheet Metal Products, Inc., manufactures a line of conveyor baskets, tote boxes, and heat-treating containers, as well as the line of Karyall utility bodies, side compartments, and merchandising bodies for various types of business, aerial revolving ladders, and hydraulic tower lifts for power companies and municipalities.

Ford to Have New Engine Plant at Rouge in 1951

Plans for another new engine plant to be built by Ford strengthens previous reports that a complete engine change will not be in the works before 1952 models are announced. Ford will convert the plant used for aircraft engine production at the Rouge during the war to a new modern engine plant. Remodeling of the plant, bought from WAA in late 1947, will not start until next October with production getting underway about a year later on V-8 engines only. The new Cleveland engine plant to be completed about the same time will produce six-cyl and V-8 engines. Ford also announced at the same time that the steel foundry will be completely re-equipped to produce crank-

(*Turn to page* 197, *please*)



FIRST OF EIGHT

Housing 15 test rooms, the first wing of the new laboratory, at the left above, is part of the new Ford Motor Co. Research and Engineering Center (described on page 18 of the March 1st AUTOMOTIVE INDUSTRIES). In the center Henry Ford II, Ford president, William C. Ford (left), a company director, and Benson Ford, vice-president and general manager of the Lincoln-Mercury Div., inspect a scale model of the new Ford engine development laboratory. At the right the Ford V-8 engine in the foreground is being tested with the 200-hp direct current amplidyne dynamometer acting as a brake to determine the horsepower of the engine on a performance run. At the left of the dynamometer is a Ford six-cyl engine which has been readied for testing when the V-8's run is finished.

shafts and exhaust valves for the new engine plants and that the production foundry will be modernized and expanded into the space vacated by the casting machine plant from which machining operations will be transferred to the new engine building.

Union Criticizes GM for Lowering Pay

UAW-CIO leaders have lashed out at GM for reducing wages by two cents an hour under the cost-of-living contract. They call the $10 to $40 reductions made by GM on cars and trucks only token cuts, and say that the reduction in wages is "morally indefensible" in view of GM's profit position. At the same time the union announces that it will seek pension and hospital-medical programs and substantial wage increases when contract talks begin in April. One thing is certain: The union will fight grimly to throw out the cost-of-living wage adjustment provision of the current contract which has been under fire since the first reduction was made under it and which drew a renewed blast when pay was cut again late in February. This year the UAW-CIO and the International Electrical Workers Union, newly formed group following expulsion of the left wing UEW, have agreed not to make a contract with GM without prior notice to each other or without consultation and agreement.

(*Turn to page 198, please*)

General News

(*Continued from page 197*)

Mansfield Gets Tire & Tube Output of Inland Rubber

The Mansfield Tire & Rubber Co. of Mansfield, O., has acquired the tire and tube production of the Inland Rubber Corp. of Chicago, and the manufacture of Inland tires and tubes has been integrated into the production of the Mansfield plant.

Chrysler May Adopt Hydraulic Lifters

It is reliably reported that Chrysler is seriously considering adoption of hydraulic valve lifters on its eight-cyl engine. The company has been testing the lifters and it is believed that they will be added within a few months.

Northrop Establishes Special Weapons Department

Northrop Aircraft, Inc., has established a separate Special Weapons Dept. to conduct research and development projects outside the field of manned military aircraft, John K. Northrop, president of the company, has announced. S. E. Weaver, Northrop engineer who will head the new department, has been associated with Northrop's guided missile development and research program.

Large Company Testing Slide Valve Engine

An interesting report on engine design involves the Skinner slide valve engine. It is understood that one of the large automotive companies is doing some intensive work with the engine in line with its studies of mechanical octanes. The objective is to determine whether it is possible to get the same type of performance with present regular fuels as is obtained with poppet valve engines and fuels of higher octane ratings.

Vehicle Scrappage Rate Aids Replacement Sales

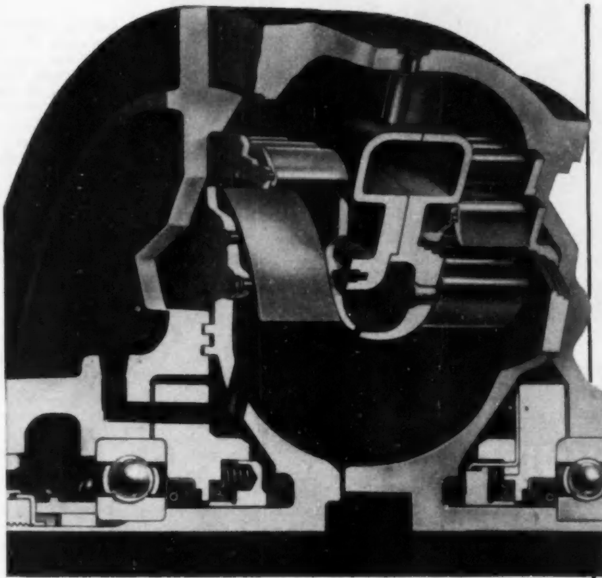
Latest revised figures on automobile and truck scrappage in 1949 compiled by R. L. Polk & Co. indicate a large replacement market for new car sales. According to the Polk estimates, scrappage of passenger cars in 1949 was 1,220,041 amounting to 25.22 per cent of new car registrations last year, but only 3.45 per cent of all cars on the road. Normal scrappage over the 25-year period before the war was about 1.6 million cars annually. Truck

(*Turn to page 200, please*)

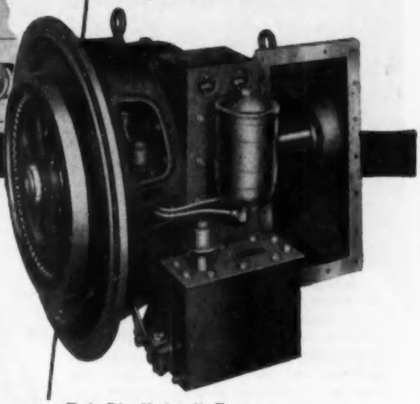
Greatest Overall

TORQUE

Multiplication



Sectioned view of Twin Disc Hydraulic Torque Converter



Twin Disc Hydraulic Torque Converter (Lysholm-Smith Type)

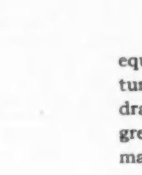
When considering power transmission units for equipment with high torque demands, designers turn naturally to Twin Disc's Lysholm-Smith Hydraulic Torque Converter, because it offers the greatest overall torque multiplication of any unit made today.

The hydraulic circuit of Twin Disc's Converter consists of a centrifugal pump discharging through a *three-stage* turbine, with two reaction stages interposed between the turbine stages. Maximum torque is developed at output shaft stall and is approximately five times engine torque . . . maximum efficiency is attained at an output speed ratio of approximately .5.

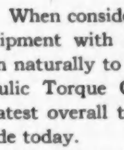
To apply a Twin Disc Torque Converter to any engine and machine assembly, it is necessary to select a converter with a proper pump size to absorb engine hp over its complete operating range. The drive ratios in the machine must be properly selected to obtain maximum converter performance throughout the complete range of output shaft operating speed.

The Twin Disc Hydraulic Division offers assistance in solving your power transmission problems. Torque Converter models are currently available with horsepower ratings from 40 to 1000 hp. TWIN DISC CLUTCH COMPANY, Racine, Wisconsin (Hydraulic Division, Rockford, Illinois).

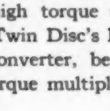
Power Take-off



Heavy Duty Clutch

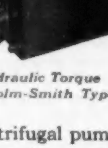


Machine Tool Clutch



TWIN DISC
CLUTCHES AND HYDRAULIC DRIVES
REG. U.S. PAT. OFF.

Tractor Clutch



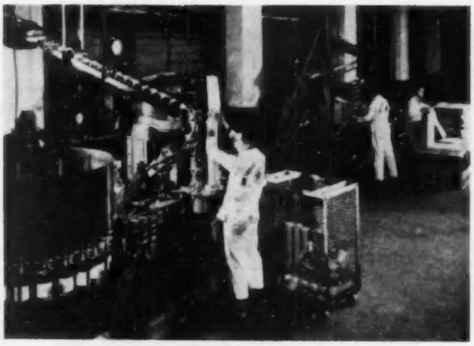
Marine Gear

SPECIALISTS IN INDUSTRIAL CLUTCHES SINCE 1918

General News

(*Continued from page 198*)

scrappage in 1949 was 484,000 units, more than twice the 25-year average scrappage of 258,980 units a year, indicating that a larger percentage of trucks are nearing the end of their useful life. Trucks going out of service last year totaled about half the number of new trucks registered during 1949, but represented only 6.4 per cent of all trucks in operation. Polk states that the figures indicate the automobile industry replacement requirements as indicated by the scrappage figures amounts to about 1.5 million passenger cars and half a million trucks. The figures also show that of the 35,407,444 cars still in service at the end of last year, 62 per cent are prewar models indicating that car scrappage should increase sharply during the next few years, bolstering the replacement demand.



This canning machine, reportedly one of the fastest in the world, fills and closes 350 one-quart cans of the Texas Co.'s new recently-announced Custom Made Havoline motor oil per minute at the company's Bayonne, N. J., plant. No hands touch the cans from the time they are unloaded from freight cars until they are packed by the machine, 24 at a time, in shipping cartons.

Seiberling Predicts Rise in Tire Prices Soon

Further substantial increases in the price of automobile tires have been predicted by J. P. Seiberling, president of Seiberling Rubber Co. He said that the price rise would probably come before next summer and will probably amount to approximately 10 to 12 per cent. He said that the action would be necessary because crude rubber prices have advanced since last summer, other materials have gone up in cost, and wages will increase from 10 to 16 per cent because of pension plans now being negotiated. The tire industry raised prices an average of 3½ per cent twice during the closing months of 1949.

Flight Testing New Combination Airplane-Automobile

An automobile-airplane that is expected by the manufacturer to be sold for $4000-$5000 when mass produced, is being flight tested by Aero Car Co., Chehalis, Wash. The first flight was made by Moulton B. Taylor, president of the company. The 100-hp craft is expected to have a top air speed of 125 mph. It is a three-passenger vehicle that can be assembled for flying in a few minutes without special tools. As an automobile, the wings are removed, folded up, and then towed on a small trailer by the car. In a ground test, the car attained an average speed of 40 mph. The propeller is mounted behind the cabin. B. F. Goodrich Co. has purchased the test ship for $10,000, according to Taylor.

(*Turn to page 204, please*)

"The Smartest Move I Ever Made... WAS CONVERTING TO BENDIX-WESTINGHOUSE AIR BRAKES!"

Often, when you bid on a hauling contract, a few dollars one way or another makes the difference between getting or losing a profitable piece of business. That's why it pays to be smart about your brakes. When you install Bendix-Westinghouse Air Brakes, you automatically reduce your overhead by savings in maintenance and parts replacement costs, savings in decreased down-time, savings from faster, safer trip speeds—*and thus increase your margin of profit.* But, why not see your Bendix-Westinghouse Distributor. Let him show you how to cut costs and how to get soft, cushioned braking plus the world's safest brake. On any truck, old or new, it's wise to install Bendix-Westinghouse Air Brakes.

THE BEST BRAKE IS **AIR**

BENDIX-WESTINGHOUSE AIR BRAKES

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THE BEST AIR BRAKE IS *Bendix-Westinghouse*

BENDIX-WESTINGHOUSE AUTOMOTIVE AIR BRAKE COMPANY
ELYRIA, OHIO

a treasure house of science for engineers

1. V-Belt Dynamometers
2. Constant Temperature Room
3. Physics Equipment Shop
4. Physics Laboratory
5. Technical Library
6. Micro-Balance Room
7. Microscopy Laboratory
8. Special Instruments Laboratory
9. Chemical Laboratory
10. Technical Office
11. New Products Laboratory
12. New Products Pilot Plant
13. New Products Evaluation Lab.
14. Adhesion Laboratory
15. Pilot Plating Plant
16. Physical Testing Laboratory
17. Experimental Compounding and Mill Room
18. Product Engineering Drafting Room
19. Specifications Work Shop
20. Product Engineering Office
21. Dark Room
22. Metallographic Laboratory

this is your new rubber laboratory

In the U. S. Rubber Fort Wayne plant is a new laboratory which you can use to work out your problems

involving rubber-bonded-to-metal parts and all-rubber products, too. You will find here the newest and finest equipment and a staff of chemists, physicists, metallurgists, and design engineers

with great experience in reducing vibration, noise and wear in automobiles and trucks, and all other mechanical equipment with moving parts.

To explore the possibilities of this treasure house of science

send for "This is Your Laboratory," the profusely illustrated booklet that takes you step by step through the great Fort Wayne laboratory. Call or write Engineered Rubber Products Division.

U.S.RUBBER
SERVING THROUGH SCIENCE

UNITED STATES RUBBER COMPANY

Fort Wayne, Indiana, or 5850 Cass Avenue, Detroit, Michigan

General News

(*Continued from page 200*)

Military Beginning to Use Commercial-Type Vehicles

The three military services are "beginning to utilize commercial-type vehicles, instead of the much higher first cost and operational costs of tactical type vehicles, wherever practicable," according to General Joseph T. McNarney, Chairman of Defense Dept.'s Management Committee. The Defense Dept. has also embarked on a replacement program of over-age vehicles, for which it is hoped Congress will grant funds that will see the job done over a five-year period. For the coming fiscal year, the Defense Dept. has requested an appropriation of $46.7 million for about 9,066 tactical vehicles, and $19 million for about 9149 commercial vehicles.

Britain Topped European Car Output in 1949

With a total of 630,665 vehicles for 1949, Britain heads European automobile production with a substantial margin. The total is made up of 412,290 passenger cars and 218,375 trucks and similar vehicles. Of this total 258,000 passenger cars and more than 93,000 commercial vehicles were exported. The following shows the situation as compared with other European countries, the figures being official with the exception of Germany, which is an estimate based on the half year's results:

	1949 Production Passenger	Trucks	Total
Great Britain	412,290	218,375	630,665
France	187,677	97,966	285,643
Germany	93,516	70,000	163,516
Italy	65,379	20,675	86,054

Ford Appoints Doman to Head Service

Ford has announced appointment of Carl T. Doman as national service manager to head up a new and expanded service department. He had been vice president and chief engineer of Aircooled Motors Corp. before joining Ford last fall. Many important additional functions will be added to the service department under Mr. Doman including an important program involving direct liaison with the field for a constant check on all Ford products.

To Hold Quality Control Conference in Milwaukee

Dedicated to "greater quantity—better quality—lower costs," the Fourth National Convention and the Fifth Midwest Conference of the American Society for Quality Control, to be held

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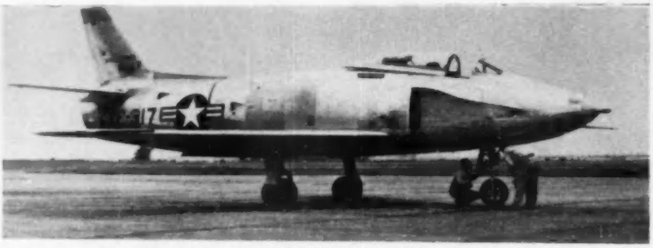
General News

(*Continued from page 201*)

in Milwaukee, Wisc., on June 1 and 2, 1950, will provide a two-day educational session, ten clinical sessions, and many exhibits.



This new high-speed penetration jet fighter for the USAF Air Force, the North American Aviation YF-93A, has successfully completed its first test flight. Designed to fly operationally at speeds close to the speed of sound, it is powered by a Pratt and Whitney J-48 turbo-jet engine with 6250 lb static dry thrust, further increased with an afterburner. The YF93A has a wing span of 39 ft, is 44 ft long, and 16 ft high.

Test English Heaters in Norway and Canada

Makers of English automobiles, as a result of "expedition" tests in Norway, now boast of heaters in their automobiles that will permit a Canadian buyer to drive around in his shirt sleeves in sub-zero weather. As adequate heating tests could not be conducted in England's temperate climate, C. S. Steadman, scientist-chief of the S. Smith company's heater division, made the research in Norway and was supported by several large British car manufacturers. Mr. Steadman pointed out that the designers then took their heating experiment to Winnipeg, which they reckoned was the coldest region of Canada where winter motoring was practicable. A number of cars were constructed here which were adapted internally to incorporate the data obtained in Norway. Electrical testing apparatus was brought from England which enabled the temperature at a number of different points inside the cars to be simultaneously checked. The volume of water flowing through the heater, and its temperature on entering and leaving were also revealed while the car was being driven at varying speeds. The new heating system, as well as a finer ventilation system, will be incorporated in the production of 1951 British cars.

Boost in January Automotive Sales

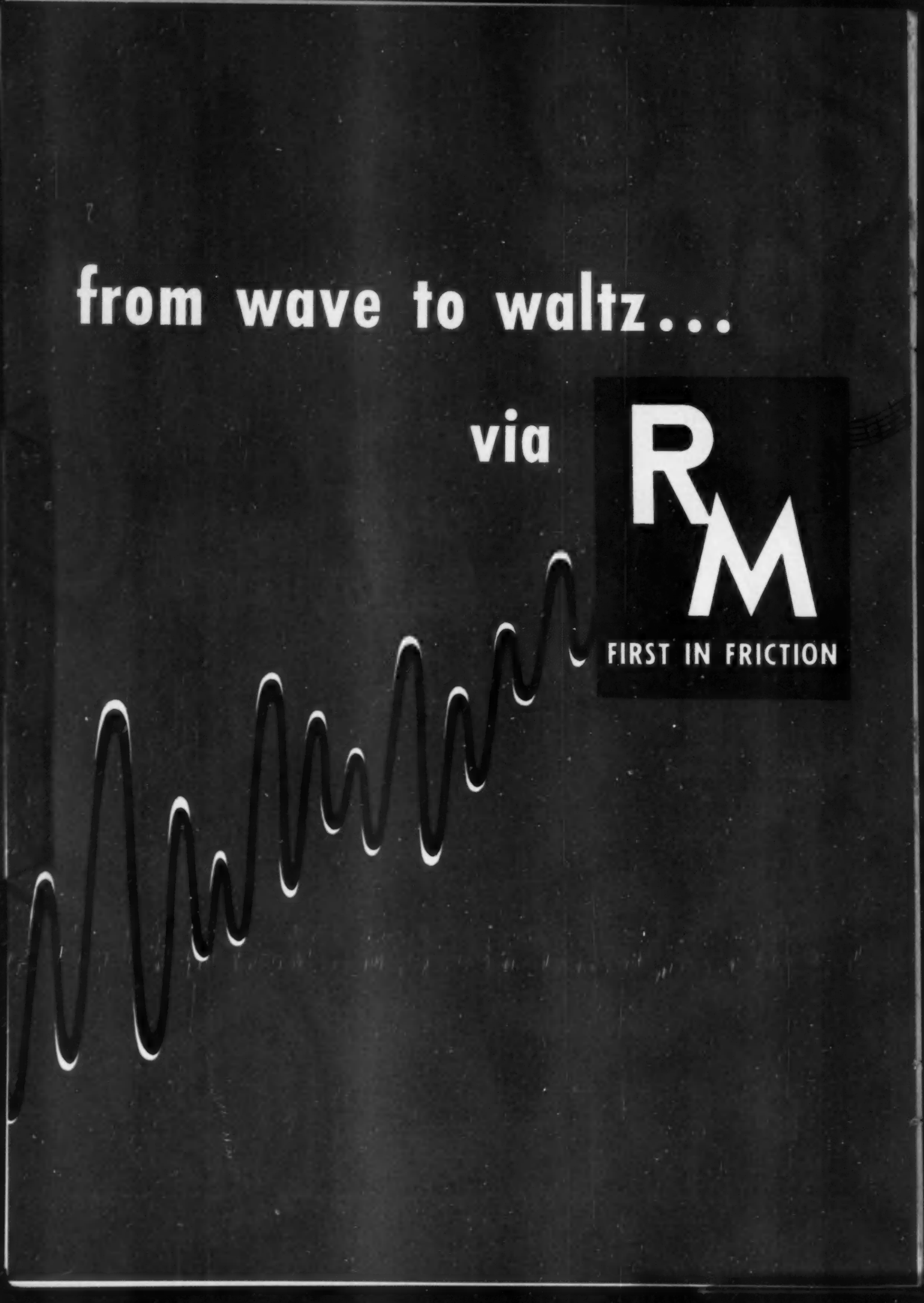
Automotive sales, up a third from 1949, were primarily responsible for holding January retailing business above levels of both December and a year previously. After allowing for seasonal and trading day factors, the Dept. of Commerce says, January retail sales of $9.5 billion were three per cent above December and two per cent over January, 1948. Most categories of durables showed less than usual seasonal declines for the month. Building materials and hardware groups showed a slight increase.

$2 Million Addition for Chrysler of Canada

The Chrysler Corp. of Canada, Ltd., has announced building additions and renovations totaling more than $2 million. The addition is to the passenger car plant. Work will begin at once.

(*Turn to page 210, please*)

Know How
Assures Proven Products from ...
Kelsey Hayes
KELSEY-HAYES WHEEL COMPANY PLANTS:
• Four Kelsey Hayes Plants in Michigan
• McKeesport, Pennsylvania • Davenport, Iowa
• Los Angeles, California • Windsor, Ont., Canada
Know How


from wave to waltz...
via
RM
FIRST IN FRICTION

General News

(*Continued from page 206*)

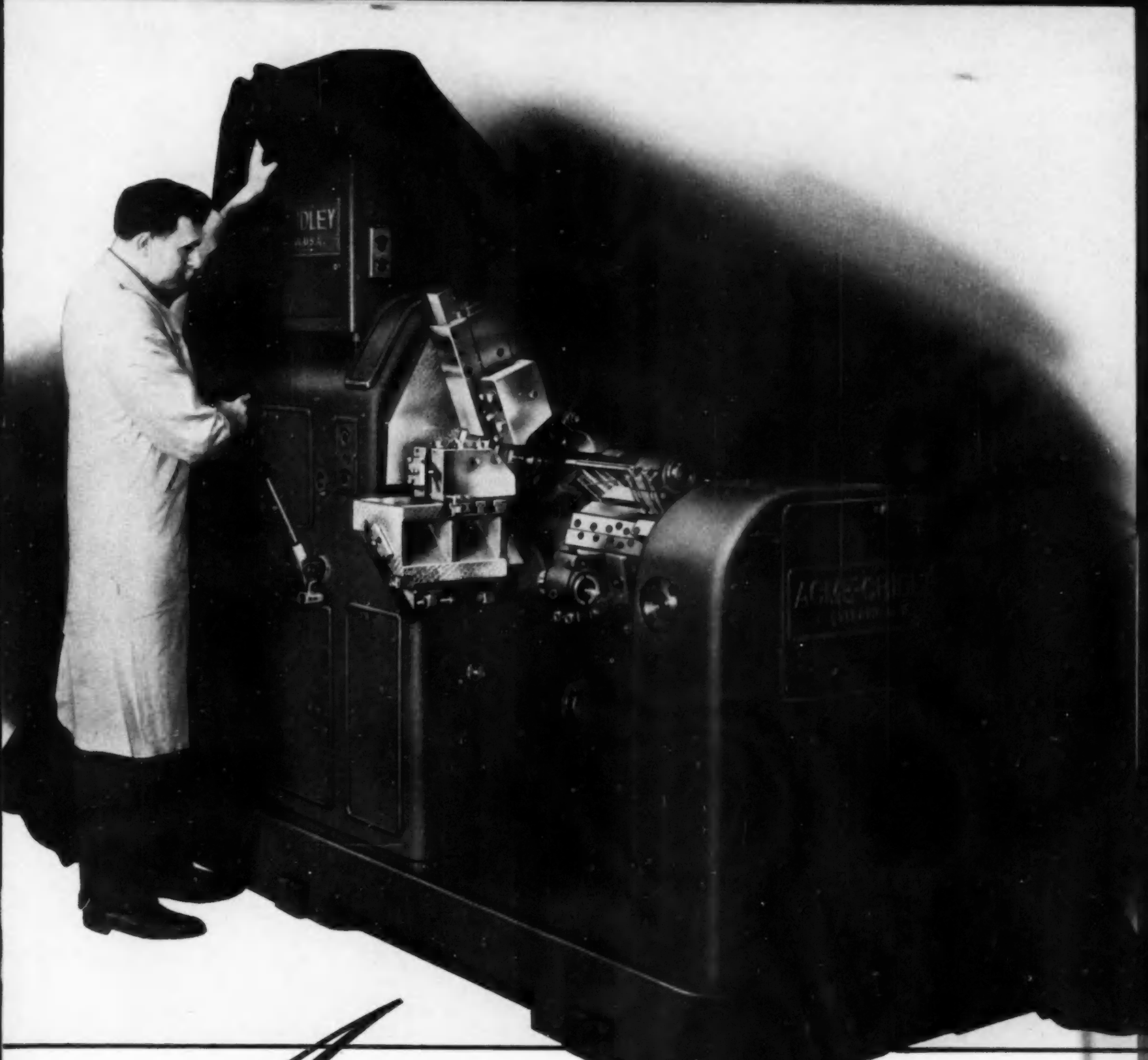
Northrop Concludes RFC Loan

Northrop Aircraft, Inc., has concluded a new loan agreement with the Reconstruction Finance Corp. The company's original $5 million loan from the RFC, dated May 31, 1949, was due for repayment in two years. The new agreement extends the repayment date for five years to about March 1, 1955.

De Havilland Claims Comet Jet 20% Cheaper Per Ton-Mile

That the Comet jet airliner is 20 per cent cheaper per ton-mile of payload, and can accomplish half as many more ton-miles in the year than the most modern aircraft of its class is the claim of the De Havilland company after a series of controlled tests of their first plane. The 20 per cent figure is based on a typical length of 1500 to 2000 statute miles, and a utilization of 3000 hours a year. The cost of kerosene has been figured at 26 cents per U. S. gallon, compared with 33 cents for piston engine fuel. The first cost of the Comet is taken at $1,260,000. As no formula has yet been established to provide figures for the cost of turbine engine maintenance, the De Havilland company has made an assessment from its own knowledge and experience which yields a cost per hour slightly less than that of piston engines in comparable aircraft. Propeller maintenance is, of course, eliminated.

Speed yields a multiple economy. Traveling a greater distance in the hour with a given payload makes the cost per ton-mile less, and it enables the aircraft to accomplish more ton-miles in the year. The figures arrived at are based on the Comet as it exists today. Other economies can be seen in the avoidance of take-offs from high and tropical airfields in the heat of the day; the simplicity of the jet aircraft and its powerplant will give reduced cost of maintenance; servicing times will be shortened; there will be briefer halts and quicker terminal turnaround. Performance figures have emphasized the relationship between test-bed performance in thrust and consumption, and the performance actually achieved in flight. If the design of this airliner were being embarked upon afresh with the knowledge possessed today, the flight performance could be appreciably improved.



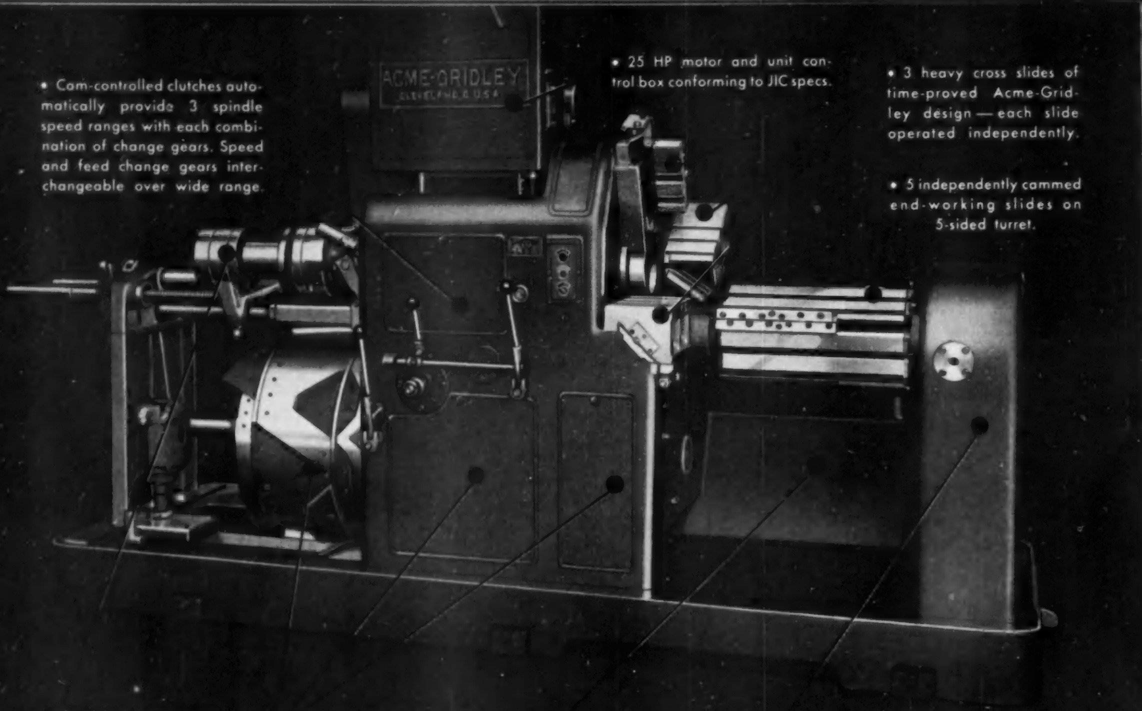
Announcing

THE FASTEST... MOST ECONOMICAL

SINGLE SPINDLE BAR AUTOMATIC

IN SIZES 2⅝", 3½", 4¾" AND 5⅛"

FOR DETAILS TURN PAGE



THE NEW ACME-GRIDLEY

MODEL "M" SINGLE SPINDLE BAR AUTOMATIC

offers

★ **SPEED** — Production up to 10 times faster — by actual test on customer jobs. Rugged doubly reinforced frame construction permits speeds and feeds required for carbide tooling.

★ **ECONOMY** — Complete freedom from gadgets and unneeded accessories permits an economical base price — matched by new economies on short or long run jobs.

★ **SIMPLICITY** — Fully automatic; wide, open tooling zone; simple camming; easy to tool, quick to retool — one man can operate several machines.

★ **ACCURACY** — Sustained close tolerances and fine finish at the fastest feeds and highest spindle speeds modern tools can take.

Clip this Coupon to your letterhead

THE NATIONAL ACME CO.
170 East 131st Street, Cleveland 8, Ohio

Send me your catalog on the NEW ACME-GRIDLEY MODEL "M" SINGLE SPINDLE AUTOMATIC as soon as it is off the press.

Name .... Title ....

Company ....

Street Address ....

City .... Zone ...... State ......

THE NATIONAL ACME CO.
170 EAST 131 STREET · CLEVELAND 8, OHIO

Machine Tool Builders Urge Replacement Program

AT A recent meeting of advertising executives of members of The National Machine Tool Builders Association, held in Cleveland, J. E. Loudon, Advertising Manager, Cone Automatic Machine Co., proposed a discussion of the possible formation of an advertising council of the association with the following objectives:

1. Development and improvement of reader interest in machine tool advertising.
2. Development of machine tool advertising as a more useful sales tool through more effective selling.
3. Establishment of closer relations with trade publications.
4. More effective use of ideas of the industry's advertising men.

The chairman of the meeting was Swan E. Bergstrom, Vice-President, Cincinnati Milling Machine Co., and chairman of the sales and service committee of the association. Later discussion lead by Mr. Bergstrom resulted in action requesting the Board of Directors of the association to authorize appointment of a committee on advertising. Those in attendance then recommended the formation of an advertising council to be managed by the proposed advertising committee. It was further recommended that the advertising council, if approved by the Board of Directors, would include advertising executives of member companies as well as representatives of advertising agencies whom members may elect to represent them.

(*Turn to page 296, please*)

CALENDAR

OF COMING SHOWS AND MEETINGS

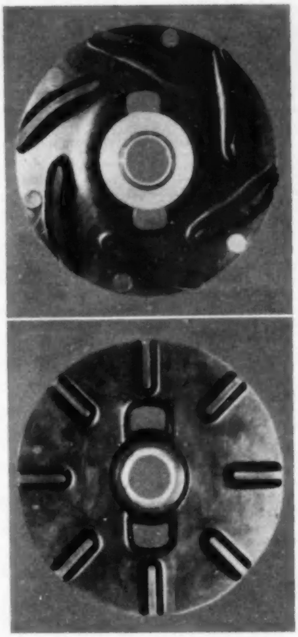
Conventions and Meetings

Geneva Motor Show, Geneva, Switzerland .... Mar. 16-26
Southwest Automotive Show, San Antonio, Texas .... Mar. 22-26
A.S.T.M. Stress Analysis in Action Mtg., St. Louis .... Mar. 28
Nat'l Production Expos., Chicago .... Apr. 4-8
Amer. Inst. Elec. Engrs. Conf. on Elec. Welding, Detroit .... Apr. 5-7
Midwest Power Conference, Chicago .... Apr. 5-7
Amer. Society Lubrication Engineers Convention, Detroit .... Apr. 10-11-12
Amer. Soc. Tool Engineers Industrial Expos., Phila. .... Apr. 10-14
Society of Motor Mfrs. & Traders British Auto. & Motorcycle Show, New York City .... Apr. 15-23
SAE Aeronautic & Aircraft Eng. Display, New York City .... Apr. 17-19
Nat'l Packaging Exposition, Chicago .... Apr. 24-28
Metal Powder Assoc. Annual Metal Powder Show, Detroit .... Apr. 25-26
3rd Highway Transportation Congress, Washington .... Apr. 25-27
Chamber of Commerce of the United States Annual Mtg., Washington, D. C. .... May 1-3
International Motor Show, Turin, Italy .... May 4-14
Mid West Automotive Show, Chicago .... May 11-14
Automotive Engine Rebuilders Assoc. Annual Convention, St. Louis .... May 18-19
International Trade Fair, Toronto .... May 29-June 9
Amer. Society for Quality Control, Fifth Midwest Conference-Annual Convention, Milwaukee, Wis. .... June 1-2
SAE Summer Mtg., French Lick .... June 4-9
Amer. Electroplaters' Soc. Convention, Boston .... June 12-16
A.S.T.M. Annual Mtg., Atlantic City .... June 26-30
International Trade Fair, Chicago .... Aug. 7-19
SAE Nat'l West Coast Mtg., Los Angeles .... Aug. 14-16
SAE Tractor Mtg., Milwaukee .... Sept. 11
Instrument Soc. of Amer. Conf. & Exhibit, Buffalo .... Sept. 18-22
SAE Nat'l Transportation Mtg., New York City .... Oct. 16-18
Amer. Society for Metals' Annual Nat'l Metal Congress & Exhibition, Chicago .... Oct. 23-27
Amer. Welding Soc. Annual Mtg., Chicago .... Oct. 23-27

Water Pump Plastic Impeller

ONE of the interesting developments in the hidden features of a motor car is found in the adoption of a molded phenolic water pump impeller by Cadillac for its 1950 engines. Chief reason for its adoption, according to Cadillac engineers, is that the molding is made accurately to size and shape, thus eliminating the previous problems of machining and balancing malleable iron impellers. Not only can the molding be used without machining but it is produced with an excellent surface finish which has a salutary effect on water pump efficiency.

Naturally, Cadillac had to be certain that the plastic part would give satisfactory service under the most severe combinations of high temperatures, high pressures, and the added complication of various combinations of approved anti-freeze mixtures. The results of actual service tests as well as chemical laboratory testing have proved that the unique phenolic formulation adopted by Cadillac meets these requirements completely.



Front view (top) and rear view of plastic impeller used in water pumps of 1950 Cadillac engines

(Turn to page 226, please)

Better Form . . . Better Finish . . . More Production . . .

NORTON No. 2 Cam-O-matic Grinder

YES, you get a better product—*faster*—with the Norton No. 2 CAM-O-MATIC Cam Grinder—for, among other things, a high degree of operating skill is built right into this machine.

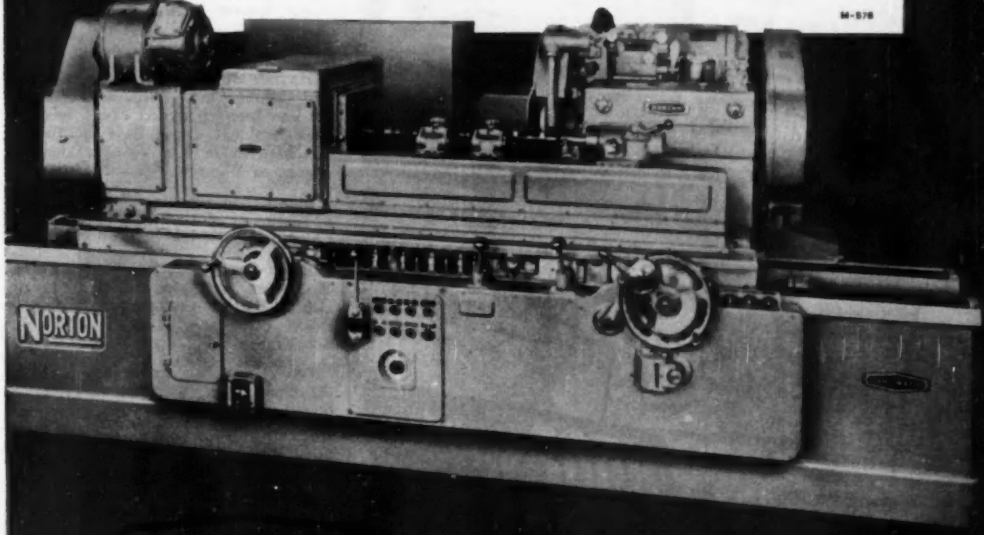
For example, its wide-range, automatically compensating work speed provides initially the ideal speed for rapid stock removal—then tapers gradually to the ideal speed for finishing—as each cam is being ground.

The operating cycle—in which split seconds are utilized—reduces lost motion to the minimum. All indexing—for work or master cam positioning—is ultra-smooth yet rapidly efficient. Wheel slide travel at each cam change—which occurs normally around 300 times per hour—is measured in thousandths of an inch each time as against inches in previous models. A fluid, shockless functioning that confers long-life benefits is particularly noticeable throughout the operation of the machine.

Yes, this new Norton CAM-O-MATIC grinder will give you dividends in increased production—and dividends in lower overall costs. And it offers more maintenance and serviceability advantages than any equipment hitherto available for the job.

A brand new catalog—Number 195—is on the press. Write for a copy.

M-578



Men in the News

Current Personnel Appointments and Changes at Plants of Automotive Manufacturers and Their Suppliers.

Ford Motor Company—The appointments of **John L. Rose** as Asst. Director of Public Relations and **Leggett Brown** as News Bureau Manager, have been announced. **Kenneth Gregory** has been named assistant to Mr. Brown. **John F. Cooney**, Manager of the Personnel Administration activity for the central controller's office, has been promoted to Manager of Employes Services for the industrial relations department of the Ford Div.

New Departure Div., General Motors Corp.—The appointment of **Norman Hill** to Manager of Service Products Sales, with headquarters in Bristol, Conn., has been announced.

Norton Company—**Herbert A. Stanton**, Vice-President and General Manager of the Foreign Div., has been re-elected a member of the National Foreign Trade Council's Board of Directors.

Acme Steel Co.—The Board of Directors has elected two new Vice-Presidents. They are **Allen B. Wilson**, Vice-President in charge of Special Products, and **Alex L. Moll**, Vice-President in charge of strip steel sales.

Aluminum Company of America—**M. Russell Kambach** has been named Advertising Manager for the company. **John M. Mitchell** has been appointed Manager of the company's Export Div. **G. B. D. Peterson** is head of the New York office.

Purolator, Products, Inc.—**Frank P. Herman**, Executive Vice-President has been elected a member of the board of directors of the company.

The Gisholt Machine Co.—Promotion of two executives in the Sales Dept. has been announced. **Eugene A. Coombs** has been appointed Export Sales Manager and will reside, temporarily, in Paris. **Robert H. Bruce** is succeeding Mr. Coombs and is now Asst. General Sales Manager.

Haynes Stellite Div., Union Carbide and Carbon Corp.—**William B. McFerrin** has been appointed Div. Executive Vice-President and **Robert M. Briney** has been made Div. Vice-President in charge of Wrought Alloy Products.

Sundstrand Machine Tool Co.—The appointment of **Carl L. Sadler, Jr.**, as Chief Engineer, has been announced.

Westinghouse Electric Corp.—**Frank E. Bodine** has been named assistant Central Station manager for the Pacific Coast District, with headquarters in San Francisco.

Lear, Inc.—Has announced the appointment of R. S. Atkinson as Sales Manager of its Romec Div.

Coleman Motors Corp.—The election of the following officers of the company has been announced. **Howard H. Agee**, President; **E. L. Martin**, First Vice-President; **Wm. C. Ramsey**, Secretary-Treasurer.

The Steel Improvement & Forge Co.—The promotion of **Walter A. Frazee** to senior Vice-President and **Aubrey H. Milnes** to Vice-President in charge of engineering and sales, has been an-

(*Turn to page 218, please*)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FACTUAL information on bearings and bearing use is being prepared monthly by Johnson Bronze engineers. It covers bearing design, alloys, bearing types, tolerances, lubrication, powder metallurgy, etc.... subjects of vital importance in the application of bearings. These data sheets are printed in 8½ x 11 inch size, for your convenience in filing. For some months, this information has been appearing in technical publications and the number of results from design engineers, research men and users of bearings has been amazing. Perhaps you, too, would like to receive these sheets. Write today for a set.
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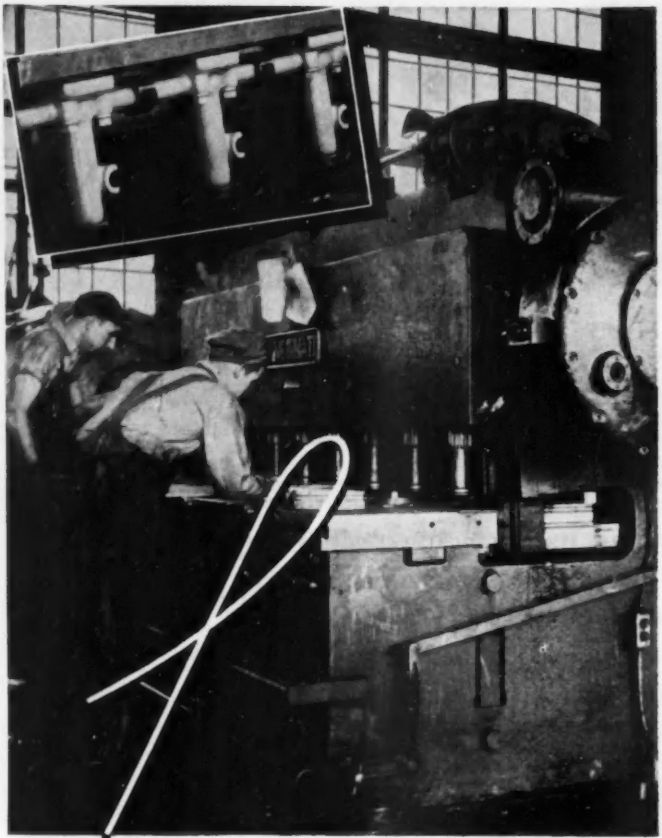


Photo courtesy of
The Cincinnati Shaper Co.

nounced. Mr. Frazee is responsible for all manufacturing operations as well as directing purchases and correlating plant production with customer requirements.

Barrett Equipment Co.—**Cliff S. Garstang** has been appointed General Sales Manager.

Caterpillar Tractor Co.—The appointment of **Dean Uhll** as Export Service Manager has been announced. **T. R. Farley,** Vice-President of the company, has been named General Manager of the company's new plant at Joliet, Ill.

Illinois Tool Works—The appointment of **Robert F. Dick** as administrative assistant to **Calmar L. Johnson,** Vice-President and Treasurer, has been announced.

E. F. Houghton & Co.—**William F. MacDonald** was elected President. He succeeds **Major A. E. Carpenter,** now Chairman of the Board of Directors. One new director was elected—**Dr. James T. Eaton,** Manager of Research.

Curtiss-Wright Corp.—**J. F. McCarthy** has been elected to the newly-created post of Vice-President for Finance.

Northrup Aircraft, Inc.—**W. J. Cerny** has been promoted from director of engineering to assistant to the president. **Leo Ohlinger,** physicist, has been named director of the company's new Computing Dept. **Warren G. Knieriem** has been appointed Chief Engineer.

Consolidated Vultee Aircraft Corp.—**G. T. Gerlach,** patent director, has been elected national chairman of the Patent Committee, Aircraft Industries Association.

General Electric Co.—**Frederick G. Weigand** has been appointed resins insulation engineer in the Chemical Department.

Pittsburgh Plate Glass Co.—Promotion of **W. L. Tomlinson** to the position of manager of automotive glass sales has been announced.

Industrial Tape Corp.—**Walter M. Cramp** has been appointed Advertising and Sales Promotion Manager. **Lincoln Brudno** has been made Asst. Advertising Manager.

Angier Corp.—**Dr. Donald W. Light** has been made Director of Research.

GMC Truck & Coach Div., General Motors Corp.—**W. L. Vande Water** has been appointed Sales Promotion Manager.

Link Aviation, Inc.—**E. Allam Williford** has been appointed General Manager and a Vice-President.

American Steel & Wire Co.—**Van H. Leichliter** has been named assistant Vice-President, Operations.

Internal Combustion Engine Institute

—At a recent meeting of the Institute. **Philip A. Norton**, Sales Manager of Wisconsin Motor Corp., was elected President.

Republic Rubber Div., Lee Rubber & Tire Corp.—**O. S. Dollison** has been elected Vice-President of the Lee Rubber and Tire Corp., with headquarters at Youngstown, Ohio. **E. M. Ikert** has been appointed General Manager of the Republic Rubber Div.

United States Steel Corp.—**Robert C. Tyson** has been elected Comptroller.

United States Rubber Co.—**P. J. McGovern** has been appointed Director of Public Relations for the Tire Div.

Standard Aeronautical Letter Symbols

To end confusion existing heretofore in the preparation and presentation of technical papers and texts in the aeronautical sciences, the American Standards Association announces a new American Standard Letter Symbols for Aeronautical Sciences. It recommends standard letter symbols for 400 primary and secondary concepts, many of which are in agreement with American Standards for other phases of science and engineering. The new standard brings up to date an American Standard adopted in 1930 but for some years obsolete.

The National Advisory Committee on Aeronautics and the Institute of Aeronautical Sciences collaborated in sponsoring this phase of a general program of standardization for letter symbols and abbreviations with five major engineering organizations. Work was started in 1947 by a special committee with Professor Thomas F. Ball, Applied Physics Laboratory, The Johns Hopkins University, as chairman. His committee is one of 15 subcommittees of Section Committee Z10 which represents 36 National societies and associations.

The new document consists of two main tables: the first alphabetical by symbols and the second alphabetical by concepts. Also included in the first table for convenience in using the standard are (1) the dimensional characteristics of the various concepts in terms of mass, length, time and temperature, (2) indications of agreement with other current American Standards, and (3) helpful remarks and definitions. Accompanying this table is an alphabetical list of symbols used as subscripts to represent secondary concepts.

Letter symbols for special concepts in meteorology and servomechanisms are not included in this standard but are under development by other special committees.

In general, the letter symbols have been selected with consideration of the fact that typewriters are commonly used in some stage in the duplication or reproduction of manuscripts. For this reason variations such as the use of bold face type have not been used to distinguish letter symbols, thus simplifying preparation of typewritten manuscripts. However, italic type is generally recommended for printed text. This is indicated for printers by underlining each symbol in typewritten manuscripts.

Necrology

George P. Thomas, 56, purchasing agent for the Frederic Flader Co., Tonawanda, N. Y. and widely known in aviation industry circles, died on Feb. 16.

Henry D. Eisengrein, 57, vice-president and general manager of the Ward LaFrance Truck Corp., Elmira, N. Y., died on Feb. 15.

Herbert E. Shutt, 59, director, production control division, GM's Fisher Body Div., died Feb. 27 in Detroit.

Origin and Meaning of the Term Torque

NOW that the term "torque" is coming into popular use, owing to the adoption of hydraulic torque converters as bus and automobile transmissions (as well as for other purposes), the question of its origin and exact meaning is sometimes raised. According to Professor Sylvanus P. Thompson, who published a work on "Dynamo-Electric Machinery" in the 1880's, the term was first suggested by James Thomson while professor of mechanical engineering at Glasgow University, and was in current use among engineers when the book was published. James Thomson, who was a brother of the famous Sir William Thomson (later Lord Kelvin), taught mechanical engineering at the Scottish university from 1873 to 1889. He suggested that the term be used for what had previously been variously known as "turning moment," "moment of a couple," "axial couple," "angular force," and "axial force." This conception had long been familiar to scientists, as it is involved in the theory of levers, which in a general way was known to the ancients, for Archimedes (287-212 B.C.) is said to have boasted that he could move the earth if he only had a fulcrum point for a lever.

Sylvanus P. Thompson also stated in his book that the German equivalent for torque was 'Zugkraft." This, however, is incorrect, as Zugkraft in German means the same as tension or tensile force in English. The correct German equivalent for torque is "Drehmoment," which in an extensive discussion of the subject is frequently abbreviated to "Moment." French equivalents, according to Thompson, are "effort statique" and "couple mécanique." The first of these, if it should ever have been used, would certainly have been a very inappropiate one, while no fault can be found with the second. At present French writers, in referring to the torque of an engine, generally use the term "couple du moteur," or "couple" for short. The German equivalent for torque converter is Momentwandler. The French term for automobile transmission is "boite de vitesse," literally speed box. For the newer type of transmission in which the torque ratio varies continuously and automatically, the French use the term "convertisseur du couple."

Following the Newtonian definition of force as "that which produces or tends to produce motion," we may define torque as "that which produces or tends to produce angular or rotary motion." It may also be defined as "that which produces twist or torsion." Torque is measured in lb-ft, the product of a force, in pounds, by the length of the lever arm on which it acts, in feet. When the torque produces motion it does work, and this work, in ft-lb, is equal to the product of the torque, in lb-ft, by the angular motion, in radians.

(Turn to page 290, please)

The Beginning of the Hydraulic Torque Converter

By P. M. Heldt

Now that the hydraulic coupling and the hydro-kinetic torque converter have come into wide use in the motor-vehicle field, a few biographical notes concerning their inventor, Dr. Hermann Föttinger, may be of interest.

Föttinger was born in Nürnberg, Germany, on Feb. 9, 1877. In 1902 he graduated in electrical engineering from the Munich Technical College. The Vulcan Shipyards of Stettin then entrusted him with the task of developing an electric drive for vessels equipped with steam turbines. After working on the problem for the better part of a year, Föttinger came to the conclusion that such a drive would be impractical, owing to its excessive weight. In connection with this work he developed a torsion indicator, and a thesis dealing with this indicator earned for him the degree of Doctor of Engineering from the Munich institution, where he had studied under the renowned Professor August Föppl.

As a possible solution of the problem assigned to him, Föttinger in 1903 proposed the use of a hydraulic equivalent of the electric drive. Even though the scheme was adversely criticized by leading technicians of the time, the Vulcan Shipyards placed at his disposal means for the design and construction of an experimental unit. In 1905 Föttinger applied for patents on both the hydraulic coupling and the converter. U. S. patents on both inventions were issued to him in 1916, No. 1,199,359 covering the coupling and 1,199,360 the converter. The German patents, which were assigned to the Vulcan Shipyards

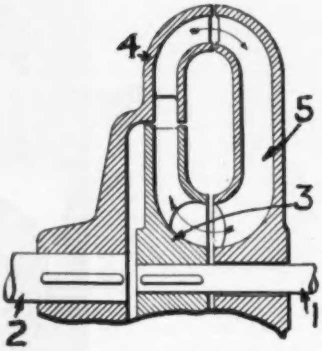


Fig. 1—This illustration is from Föttinger's U. S. patent No. 1,199,360, issued Sept. 26, 1916. 1—Primary shaft. 2—Secondary shaft. 3—Primary turbine wheel. 4—Secondary turbine wheel. 5—Stationary return guide wheel.

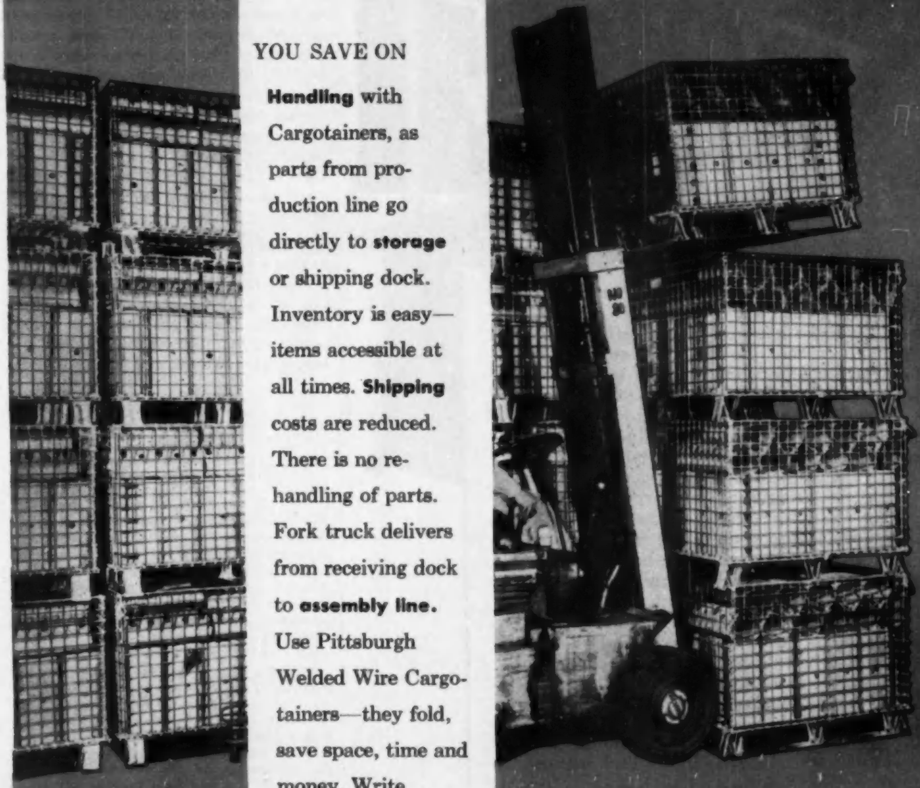
in 1908, expired in 1930, and the American patents, of course, also have long since expired.

The first converter built showed an efficiency of 83 per cent in its acceptance tests. In 1906 the German Schiffbautechnische Gesellschaft (Marine-Engineering Society) awarded Föttinger its silver commemorative medal for his inventions. The first ship to carry the converter was the "Föttinger Transformator," which was launched in 1908. The first outside order was received from an Englishman, Holzapfel, who wanted to install the converter in a vessel equipped with a suction-gas powerplant. Numerous orders from shipyards and the German Navy followed, and the maximum efficiency increased from 87 per cent in the case of the Holzapfel unit to 93 per cent in

(*Turn to page 280, please*)

Pittsburgh

CARGOTAINERS



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Handling with Cargotainers, as parts from production line go directly to **storage** or shipping dock. Inventory is easy—items accessible at all times. **Shipping** costs are reduced. There is no rehandling of parts. Fork truck delivers from receiving dock to **assembly line.** Use Pittsburgh Welded Wire Cargotainers—they fold, save space, time and money. Write Department AI.

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Plastic Impeller

(*Continued from page 214*)

As far back as 1938, Durez Plastics & Chemicals, Inc., was responsible for the development of a phenolic impeller which was used in a passenger car engine later taken out of production. More recently, Durez has taken the initiative and has interested a number of passenger car builders in the advantages of this type of product.

At the present writing Durez recommends the use of its No. 14900 black phenolic molding compound which has an apparent density of 47 (average); specific gravity of 1.37; and tensile strength of 6000 psi (min.) after 48 hr at 50C. For some applications requiring higher impact values, Durez recommends its No. 14899 black phenolic molding compound. The latter has an apparent density of 40 (average); specific gravity of 1.38; and tensile strength of 6000 psi (min.) after 48 hr at 50C.

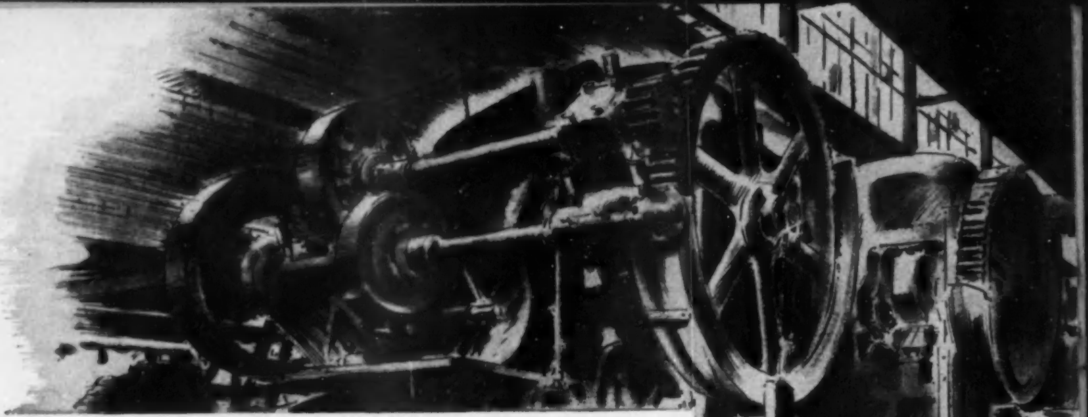
Compared with cast metal impellers having a specific gravity around 7.2, the plastic impeller permits a weight saving of approximately 81 per cent. Obviously the weight saving in pounds per piece is quite small. But it does represent a weight reduction.

BOOKS . . .

PATENT TACTICS AND LAW, Third Edition, by *Roger Sherman Hoar*, M.A., LL.B., published by the *Ronald Press Co.*, New York. This book has been completely revised to meet the changes that have taken place in patent law. It is a treatise upon patent tactics and translates into plain English enough of patent law to enable a business executive, an engineer, or an independent inventor to understand and to cooperate with his attorney when dealing with a specific patent problem.

Effective Mar. 1, 1949, the *Rules of Practice* of the Patent Office were completely revised, rewritten, and renumbered. Even before the issuance of the new *Rules* there had probably been more change in substantive patent law in the ten years since the publication of the Second Edition of *Patent Tactics and Law* than in any other equal period of time. Because of these changes, the entire text has been rechecked, references to the *Rules* renumbered, and major portions of the book rewritten.

TECHNICAL REPORTS NEWSLETTER (February, 1950), Published by *Office of Technical Services*, U. S. Dept. of Commerce, Washington 25, D. C. New bibliographies on creasing and water-repellency of textiles are discussed in this brief review. Prepared by the Army Quartermaster Corps to assist in the advancement of textile research, this newsletter contains principal papers on these subjects as far back as 1937. Besides the textile bibliographies, there are many other technical developments pertaining to varied fields reported in the current issue.



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NEW Large Capacity VACUUM RELAY VALVE

Exclusively Outmodes All Other Vacuum Valves

Maximum braking obtained in 1/3 the time • Increases efficiency of brakes on high speed stops and on steep down grades • Built-in emergency check valve—eliminates separate check valve—reduces installation cost • 25% lighter than total of units it replaces • So greatly advanced in design and operating features that it outmodes other vacuum valves • Write or phone for complete details.

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ADVANCED DESIGN 4-in-1-Unit

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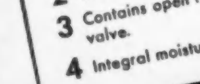

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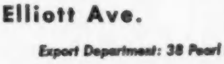
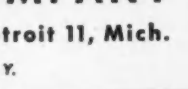


Air and Electro-Pneumatic DOOR CONTROLS



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FOR ADDITIONAL INFORMATION regarding any of these items, please use coupon on PAGE 180

J-38—Air-Operated Drop Stamp

New Model L Cecostamp, an air-operated drop stamp announced by Chambersburg Engineering Co., Chambersburg, Pa., and using impact blows of controlled intensities to produce a wide variety of metal shapes from any of the formable metals, is claimed to be 10 per cent more powerful than preceding Cecostamps. It has been adapted to manufacture of bus and automobile bodies, sheet metal aircraft parts, etc.

Chambersburg Cecostamp, Model L

The control mechanisms are located so that the operator is free of moving parts. With the overhead safety rest control, the operator stands solidly on both feet and both hands are occupied and cannot be under the die. Frame-to-anvil bolts and springs are recessed avoiding hazards to clothing. Positive self-positioning safety rests, built into the side frames between the guides, hold the ram when changing dies or working between dies. A steel bolster plate on the anvil equipped with T slots makes for rapid and accurate setting of dies.

The Model L Cecostamp is provided with shock insulating features to cushion vital parts. Fabreeka pads cushion the yoke-to-frame joints, and automatic lubrication of valve cylinder and guides prolongs the life of these parts. The lubricator is turned on au-

(Turn to page 232, please)

NEW PRODUCTION AND PLANT EQUIPMENT

For additional information please use coupon on page 180

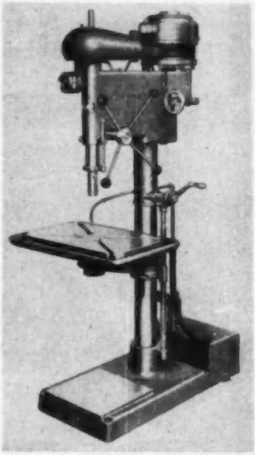
(*Continued from page* 229)

tomatically as soon as the Cecostamp is operating. Valves are cast integral with the yoke, eliminating piping and air losses.

J-39—Medium-Weight Drilling Machine

Introduced by Sibley Machine & Foundry Corp., South Bend, Ind., is a medium-weight drilling machine with a 25 in. swing. Known as the Model E-25, the new 765 lb weight drilling machine has been developed to fill the gap between the larger heavier type and the light bench class.

The Model E-25 provides a variable speed drive from which the exact spindle speed may be obtained for any size drill from ⅛ in. to 1 in. and an extra large rectangular 18 in. by 25 in. table with coolant trough.

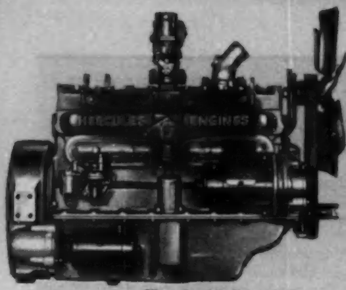


Sibley medium-weight drilling machine Model E-25

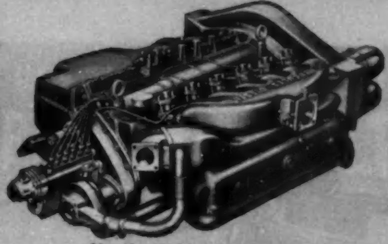
Powered by 1½ hp. axial air gap type motor, the new Sibley is suited for high speed production or small shop work. Rated capacity is ¾ in. steel and 1 in. in cast iron.

There are no belts to change. A tachometer on front of the machine provides accurate speed readings. Five options of spindle speeds each with a 4 to 1 ratio are available, ranging from a low of 206-825 rpm to a high of 540-2160 rpm, with 3 phase 60 cycle motor. A speed chart on the side of the ma-

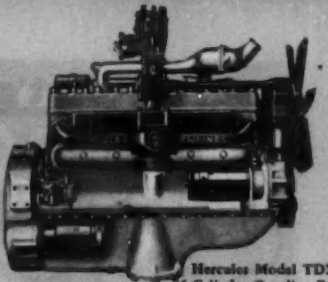
(*Turn to page 234, please*)



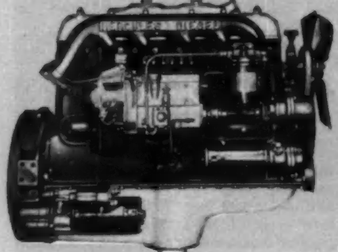
Hercules Model QXLD
6 Cylinder Gasoline Engine



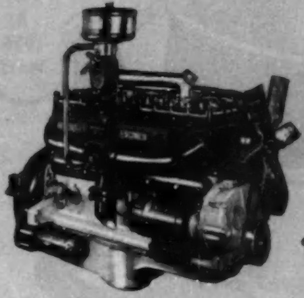
Hercules Model DWXLDF
6 Cylinder Diesel Engine
(Pancake Type)



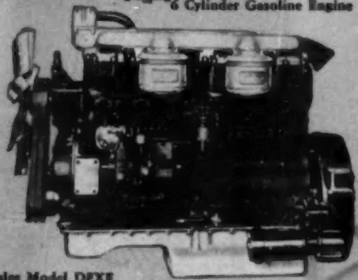
Hercules Model TDXB
6 Cylinder Gasoline Engine



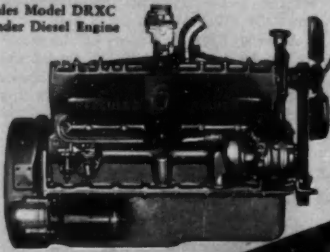
Hercules Model DRXC
6 Cylinder Diesel Engine



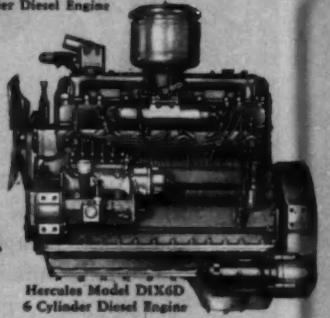
Hercules Model HXE
6 Cylinder Gasoline Engine



Hercules Model DFXE
6 Cylinder Diesel Engine



Hercules Model JXE3
6 Cylinder Gasoline Engine



Hercules Model DIX6D
6 Cylinder Diesel Engine

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Outstanding performance and economy are written into the records of thousands of successful Hercules gasoline and diesel engine applications where high speed, heavy duty service is important. This is offered as proof of Hercules' acceptance . . . Hercules' dependability. As a power user, it will pay you to draw upon the priceless experience and vast engine building facilities of Hercules in planning future power requirements.

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GAS AND GASOLINE ENGINES

Model	Bore and Stroke	Cu. In. Displ.
Two Cylinder		
BXB	2 7/8" x 3"	39
NXA	3" x 4"	56.5
NXB	3 1/4" x 4"	66.3
Four Cylinder		
ZXA	2 1/2" x 3"	59
ZXB	2 5/8" x 3"	65
IXA	3" x 4"	113
IXB	3 1/4" x 4"	133
JX4E	3 1/2" x 4 1/4"	164
JX4C	3 3/4" x 4 1/4"	188
JX4D	4" x 4 1/4"	214
Six Cylinder		
QXA	3 1/8" x 4 1/8"	190
QXB	3 1/4" x 4 1/8"	205
QXC	3 3/8" x 4 1/8"	221
QXLD	3 7/16" x 4 1/4"	236.7
JXE	3 1/2" x 4 1/4"	245
JXB	3 5/8" x 4 1/4"	263
JXC	3 3/4" x 4 1/4"	282
JXD	4" x 4 1/4"	320
JXLD	4" x 4 1/2"	339
WXC-3	4 1/4" x 4 1/2"	383
WXLC	4" x 4 3/4"	358
WXLC-3	4 1/4" x 4 3/4"	404
TDXB	4 3/8" x 5 1/4"	474
RXB	4 1/2" x 5 1/4"	501
RXC	4 5/8" x 5 1/4"	529
RXLC	4 5/8" x 5 1/4"	529
RXLD	4 3/4" x 5 1/4"	558
RXLDH	4 3/4" x 5 1/4"	558
HXB	5" x 6"	707
HXC	5 1/4" x 6"	779
HXD	5 1/2" x 6"	855
HXE	5 3/4" x 6"	935

DIESEL ENGINES

Model	Bore and Stroke Inches	Piston Displ. Cu. In.
Two Cylinder		
DIXC	4" x 4 1/2"	113.1
DIXD	4 1/4" x 4 1/2"	127.5
Four Cylinder		
DIX4B	3 1/4" x 4"	133
DIX4D	3 5/8" x 4"	166
DOOB	3 3/4" x 4 1/2"	198.8
DOOC	4" x 4 1/2"	226.2
DOOD	4 1/4" x 4 1/2"	255
Six Cylinder		
DIX6D	3 5/8" x 4"	249
DJXB	3 1/2" x 4 1/2"	260
DJXC	3 3/4" x 4 1/2"	298
DJXH	3 3/4" x 4 1/2"	298
DJXHF	3 3/4" x 4 1/2"	298
DWXC	4" x 4 3/4"	358
DWXD	4 1/4" x 4 3/4"	404
DWXLD	4 1/4" x 5"	426
DWXLDF	4 1/4" x 5"	426
DRXB	4 3/8" x 5 1/4"	474
DRXC	4 5/8" x 5 1/4"	529
DFXB	5" x 6"	707
DFXC	5 1/4" x 6"	779
DFXD	5 1/2" x 6"	855
DFXE	5 5/8" x 6"	895
DFXH	5 3/4" x 6"	935
DFXHF	5 3/4" x 6"	935
Eight Cylinder		
DNX V-8B	5 3/4" x 6"	1247
DNX V-8C	6" x 6"	1348
DNX V-8D	6 1/4" x 6"	1468
DNX V-8DS	6 1/4" x 6"	1468

Unlimited power applications are reflected in the 33 gas, gasoline engines and the 30 diesel engines which are available in the 1950 Hercules line.

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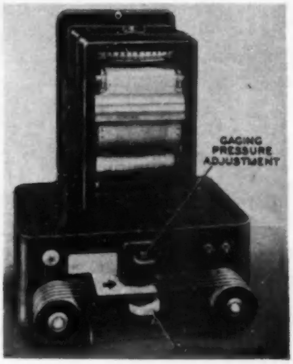
chine shows proper speeds for different drill sizes.

The model provides full floating ball bearing spindle with maximum travel of 8 in.; 4½ in. diam solid column; and table accuracy maintained to 0.0007 in. in 6 in. radius.

J-40—Micrograph For Continuous Strip

Designed for inspecting a cross section of continuous strip material such as cellophane, vinyl plastic, thin papers and other like materials, a new production control instrument—the micrograph—has been announced by Pratt & Whitney, Division of Niles-Bement-Pond Co., West Hartford, Conn.

After a 2 in. wide piece of the material to be gaged is cut out across the width of the strip material, the piece is placed lengthwise on the indexing feed mechanism of the P&W micrograph which automatically indexes the material, takes a reading every ¼ in., and records the thickness. The indexing mechanism is tied into the chart drive of the recorder on a 1 to 1 ratio.



Pratt & Whitney thickness comparator, the micrograph

When a piece of material being gaged (which represents the width of the product in process) has passed through the micrograph, the length of the chart record is equivalent to the width of the material. The chart record can then be laid on the continuous strip material across the width of the line to afford a very accurate production control graph of the material thickness variations across the width.

(Turn to page 236, please)

NEW PRODUCTION AND PLANT EQUIPMENT

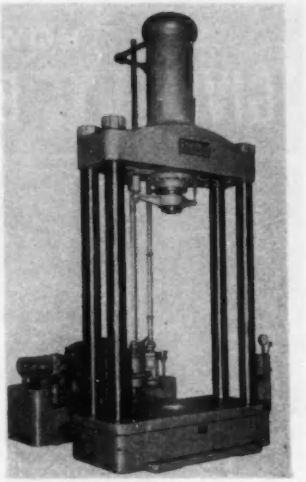
For additional information please use coupon on page 180

(*Continued from page* 234)

J-41—High Speed Forcing Press

New high speed forcing press put out by the Hannifin Corp., Chicago, Ill., affords unusual ram speed for a 150-ton press—a maximum of 275 in. per min. This four-post hydraulic forcing press is used primarily for the press-fit assembly of shafts to armatures and rotors, and has an 82-in. gap, ram up, and a 48-in. maximum stroke. There are 60 in. between columns, left to right, and 10 in. front to back. The table, which is 36 in. deep, front to back, is 18 in. above the floor and has a 10-in. hole in its center to allow shafts to extend through the table. The ram is guided to prevent rotation if a fixture is used.

The unit incorporates Hannifin's sensitive pressure control, which allows



Hannifin 150-ton hydraulic press for large press-fit assemblies

the operator to vary, by the amount he moves the single hand lever, the amount of pressure applied. When a uniform pressure is to be applied repetitively, a stop is provided to limit the travel of this control lever. The predetermined pressure thus obtained can be varied from 15 tons to full, 150-ton capacity. Up-travel can be limited to that needed to accommodate the work.

J-42—Ball Turning Rest

A new ball turning rest of improved design for smoother operation of Monarch 14 in., 16 in. and 20 in. series 60 engine and toolmakers' lathes is announced by the Monarch Machine

Setup for turning a ball on a Monarch 14, 16 or 20 series 60 engine or toolmaker's lathe equipped with improved ball turning rest.

Tool Co., Sidney, Ohio. The new design is said to simplify setup, its application to the machine being a simple, quick procedure.

The regular bottom slide may be positioned either on center for ball

(*Turn to page* 240, *please*)

Diagram shows operation *of the new Fram Dust Tunnel. Vehicle radiator is disconnected and replaced by Tunnel water supply (A) to prevent rise in air temperature. Exhaust and cooling water are carried away through system (B). Rear wheels rotate rollers (C) which drive blower (D). Measured dust is metered in through blower and follows air stream indicated by arrows.*

What the FRAM Dust Tunnel Means to Automotive Manufacturers . . .

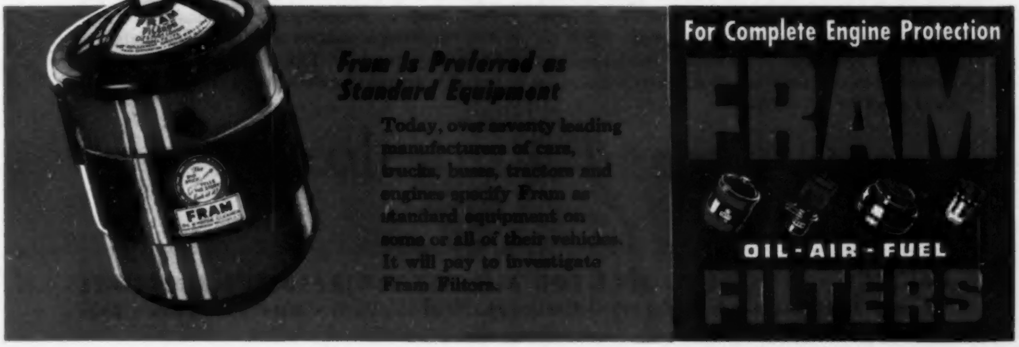
HOW LONG can an engine last under dusty operating conditions? How much effect do the known methods of filtration have? How can engine life be extended? What is the next step forward?

These are some of the problems that prompted Fram Corporation to design and erect the new Dust Tunnel at Dexter, Michigan. Here, tests relative to the above can be run in a matter of days rather than weeks. Here, operating conditions are controlled rather than being unpredictable hindrances.

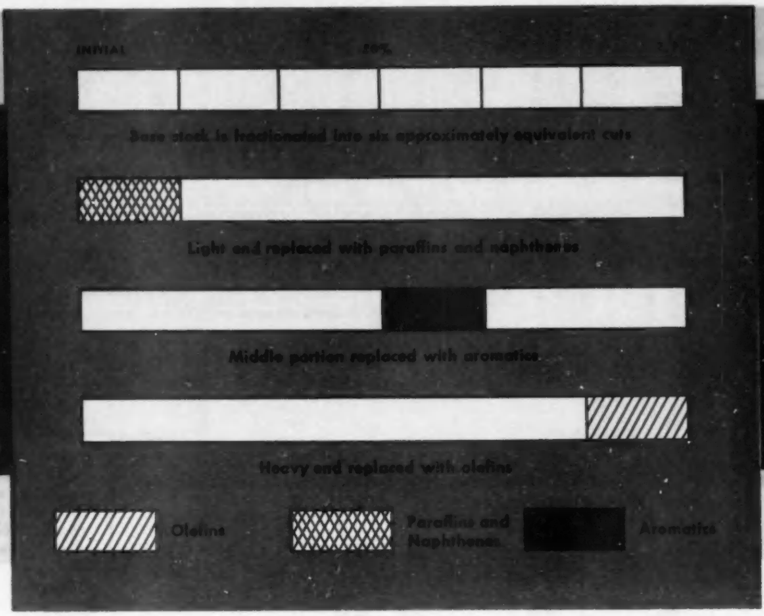
Coupled with the new Fram Air Filter Laboratories at Dexter, the Dust Tunnel is Fram's latest effort in a renewed and vigorous research program. And, the total effort of this program is designed to bring you better oil, air and fuel filtration.

If you would like to read a more complete, illustrated summary of the Dust Tunnel's engineering operations, write us on your company letterhead for a free copy of the Dust Tunnel Book, "Fram Faces Broader Horizons."

Fram Corporation, Providence 16, R. I. ***In Canada:*** **J. C. Adams Co., Ltd., Toronto, Ontario**



EXAMPLES OF HOW DIFFERENT HYDROCARBON TYPES ARE BLENDED TO PRODUCE EXPERIMENTAL FUELS



DuPont Research

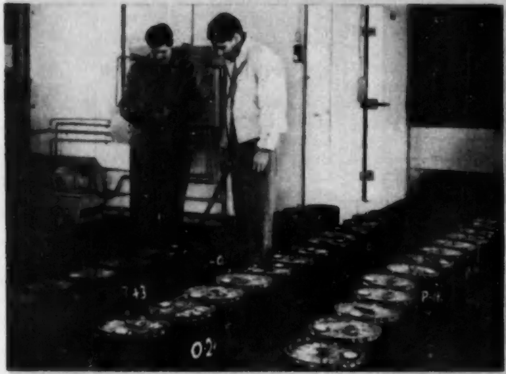
of Fuel Hydrocarbon Types on

As a service to the refining industry, Du Pont is now engaged in a program of fuel research designed to help provide answers to such questions as: how should fuel blending stocks rich in aromatics, naphthenes or other hydrocarbon types be blended to provide optimum fuel performance—where and how should they be blended to make most efficient use of tetraethyl lead compounds. This research project is devoted to studying the effects of fuel hydrocarbon types on road antiknock performance and is one of the most extensive of its type ever undertaken. Work on this study is now in progress and results will be available in the near future to assist refiners in their gasoline production.

As a starting point for this work a good quality regular grade gasoline was fractionated into six approximately equivalent cuts. Then each fraction was replaced systematically with pure hydrocarbons of three types (1) olefins, (2) paraffins and naphthenes and (3) aromatics (where possible). The components used in making these blends were selected so that the volatility of the finished blends was changed as little as possible and the research octane numbers of the unleaded blends were constant within plus or minus five units. The resulting blends, both clear and containing various amounts of TEL are being road knock tested in current model cars typical of the great

MAKE DU PONT THE SOURCE FOR ALL OF YOUR GASOLINE ADDITIVES

Tetraethyl Lead Compounds (Motor Mix—Aviation Mix) • Antioxidants • Metal Deactivator • Dyes



Experimental fuels, stored under refrigerated conditions to maintain uniformity of volatility, are carefully checked before road testing.

Cars used for testing are current models typical of the great majority on the road as well as others equipped with high compression ratio research engines.

Studying the Effects

Road Antiknock Performance

majority on the road as well as in cars equipped with high compression ratio research engines. Thus data are being obtained on both present day and future requirements.

Such information will provide a better understanding of: (1) the effect on road antiknock performance and lead response of gasoline hydrocarbon type and position in the fuel boiling range and (2) the effects of engine design and compression ratio on the relative performance of basically different fuels.

This project has a very practical value to the refiner because it will give him leads as to how he can best blend his stocks and make the best possible utilization of tetraethyl lead.

Du Pont, as a supplier of tetraethyl lead compounds to a constantly increasing number of refiners, is working with the refining and automotive industries toward the common goal of improved motor car performance. Du Pont Petroleum Chemicals research is aimed at improving antiknock compounds and helping the refiner utilize present tetraethyl lead compounds most efficiently.

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NEW PRODUCTION AND PLANT EQUIPMENT

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(*Continued from page 236*)

turning or boring, or out of alignment with the spindle center for spherical radius turning. A micrometer dial is provided to adjust the bottom slide in or out. The diameter of the ball or radius which is being turned can also be controlled by means of a similar micrometer adjustment.

With this new ball turning rest, a 4 in. diam ball can be turned on the 14 in. Monarch series 60 engine or toolmaker's lathe, a 5¾ in. diam ball on the 16 in. machine, and a 6 in. diam ball on the 20 in. unit. When equipped with a 1 in. raise, the 16 in. lathe is capable of turning a 7⅝ in. diam ball.

Boring a socket is also performed effectively as a result of this basic improvement in ball turning rest design. Maximum size which can be handled is 4 in. on 14 in. and 16 in. machines, and 6 in. on the 20 in. unit. On some classes of work, concave spherical surfaces with larger radii (up to as much as 11 in. or 12 in.) can be machined.

J-43—Heavy Duty Honing Machine

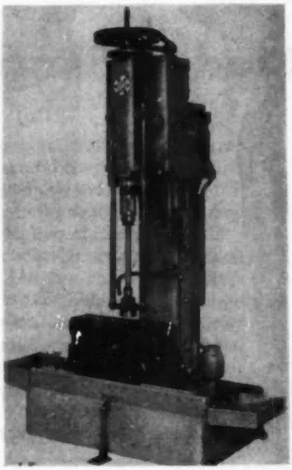
A general purpose, heavy duty semi-production honing machine, put on the market by Micromatic Hone Corp., Detroit, Mich., is designed to hone any bore from 1 in. to 4 in. in diam and up to 10 in. in length.

All controls of the movement of the hydraulically reciprocated head are provided on the Uni-Control lever. The tool is "inched" into the bore, the rotation is started and stopped, the reciprocation speed is regulated and the tool is withdrawn from the bore by the manipulation of this one lever.

The tool is expanded by an adjusting sleeve, on the head, that does not rotate with the tool. Stock removal and size are computed and controlled by a calibrated ratchet ring on this sleeve.

The machine is particularly adaptable to the reconditioning of parts such as automotive cylinder bores and connecting rods. With a lateral indexing table mounted on the base as shown in the illustration, any type of block can be reconditioned to factory tolerances. It is not necessary to remove the crankshaft bearings or the studs. The block is located by pins and held down by quick lock clamps. The table is positioned for each cylinder by an indexing bar. With this equipment any amount of stock can be removed and the cylinder made straight and round. Boring is not necessary. From 5 to 8 blocks can be reconditioned per hr.

For reconditioning connecting rods a



Micromatic Hone Hydrohoner, Model 718

Safe Steering

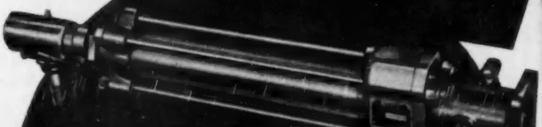
in Emergencies *with*

VICKERS Hydraulic POWER STEERING

When forced off the road onto rutted, soft, rocky or snow-banked shoulders, your driver will be grateful for Vickers Hydraulic Power Steering. The steering mechanism is then hydraulically locked against road condition reaction . . . the vehicle cannot swerve from road reaction. There is no "wheel fight" to wrench the steering wheel out of the driver's hands. Pull back onto the road requires only the "force of a finger" on the steering wheel.

Vickers Hydraulic Power Steering is safer . . . effortless . . . provides hydraulic power at instant command of the driver to meet any and all steering requirements. This extra-quick steering greatly increases the ability to maneuver in an emergency. Another important advantage . . . the driver is less tired, more alert.

Vickers Hydraulic Power Steering can be used as original equipment, or adapted to most trucks and other vehicles now in service. Write for Bulletins 47-30 and 49-52 covering additional advantages and specifications.



Vickers Hydraulic Steering Booster with Integral Overload Relief Valve. Bulletin 47-30a.

Vickers Balanced Vane Type Pump is Engine Driven. Bulletins 36-12 and 49-52.

Vickers Hydraulic Power Steering is Effortless, Positive, Shockless

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4068

ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

NEW PRODUCTION AND PLANT EQUIPMENT

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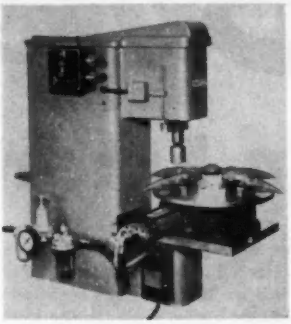
riser block is mounted on the table with a universal type fixture that will hold any automotive rod. The latest type Micromold tool is available for reconditioning rods. Production is from 60 to 90 rods per hr with from 0.004 in. to 0.010 in. stock removal.

J44—Oil Hydraulic Press

Announced by Hy-Air Products Co., Jackson, Mich., is a new air operated, oil hydraulic press equipped with an eight station air operated automatic dial index table. Automatic cycling is accomplished by energizing an automatic reset timer with a manually operated momentary contact switch on the timer. This starts the timer and



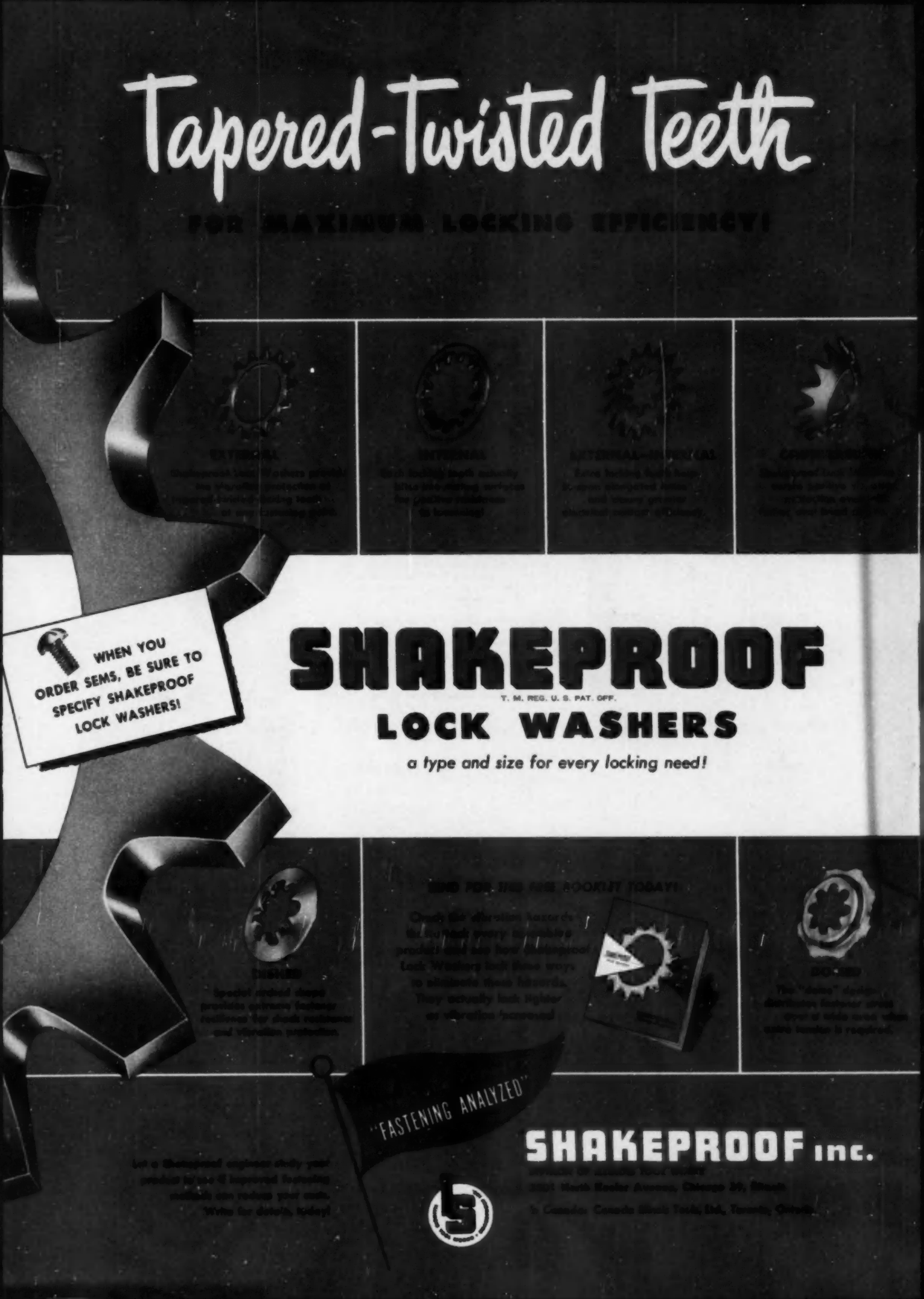
Hy-Air air-operated oil hydraulic press

the down stroke of the press ram. When the preset time has elapsed, the timer de-energizes the solenoid valve controlling the ram and the ram begins its return stroke. At the top of the stroke a one-way dog trips a microswitch connected to the advance side of the index table cylinder, causing the table to advance to the next position. When the next position is reached a microswitch on the table is tripped, restarting the timer and beginning the next cycle.

The time for the cycle can be accurately adjusted by a moving pointer on the timer dial for cycles of one to 60 seconds. The electrical circuit is provided with a master switch which can be operated either by hand or foot. Automatic ejection of parts can be done either mechanically or with exhaust air. Stripping is done easily because the ram has full power on the return stroke.

The press is made in 2½ and 5 ton

(*Turn to page 244, please*)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FOR MAXIMUM LOCKING EFFICIENCY!
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LOCK WASHERS
a type and size for every locking need!
"FASTENING ANALYZED"
SHAKEPROOF inc.

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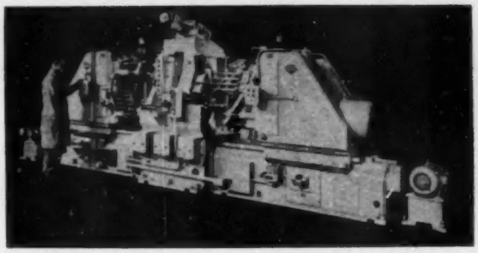
models with stroke of 2 or 5 in. Standard "O" rings are used throughout. There are only two moving parts.

Besides the eight station index table, 4, 6, 12 or 24 position tables also are available with or without complete tooling.

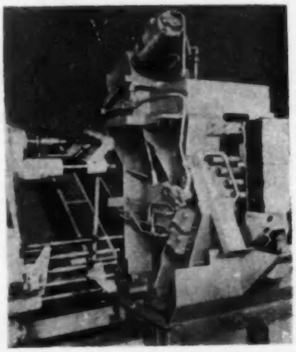


NATCO automatic hopper feed multi-driller for machining piston pins.

J-45—Multi-Driller For Piston Pins

The National Automatic Tool Co. of Richmond, Ind., announces manufacture of a new automatic hopper feed multi-driller to be used by a large automobile manufacturer in the machining of piston pins. This new automatic NATCO machine has a central fixture with heads sliding on bed ways from opposite side. Operations are accomplished automatically, with hopper feed and automatic loading, clamping, unclamping and ejecting.

The machine is push-button operated and goes through automatic cycles of operation to drill, chamfer, rough and finish ream 575 piston pins per hr. Net production required 460 parts per hr. A feature is the chip conveyor attached to the rear of the fixture; it runs in under the fixture and carries chips out of the machine.



Close-up showing hopper feeding and automatic loading. Conveyor attached to rear of fixture pedestal runs underneath to carry out chips.

Operations are as follows: The machine loads four parts in position No. 1; Position No. 2: right and left hand heads drill for 0.652 in. diam 1/5 through. Position No. 3: right and left hand heads drill for 0.652 in. diam 2/5 through and chamfer inside diam. Position No. 4: right hand head drills for 0.652 in. diam across center while left hand head idles. Position No. 5: right hand head rough reams through using accelerated spindles while left hand head idles. Position No. 6: right hand head idles while left hand head reams through to 0.652 in./0.657 in. diam using accelerated spindles. Position No. 7 unload four parts.

(*Turn to page 247, please*)


30 years of
time-tested
principles plus
bold imagination
developed . . .
CLARK tractor DRIVE units
FOR—HIGHWAY · INDUSTRIAL AND FARM TRACTORS
SEE OTHER SIDE

MATERIAL HANDLING NEWS

"We'd be lost WITHOUT THE CLARKS"

SAYS PACIFIC AIRMOTIVE

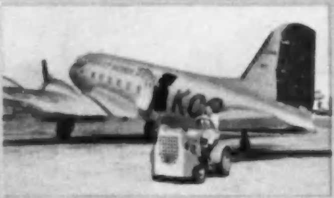
That speed on the ground means more time a-wing has been amply demonstrated by Pacific Airmotive Corporation, whose business is to provide service and parts for aircraft. Their Clark fleet consists of a Clarktor-6* industrial tractor for towing planes and other hauling assignments, and a Clark Carloader* fork-lift truck to handle the lifting jobs.

In dismounting and mounting 1500-pound propellers, 2200-pound engines, and other heavy, bulky units, the fork-lift truck makes quick, easy work of it—much faster and easier and a great deal safer than the method formerly employed.

In addition to plane-service activities, Pacific Airmotive provides freight-terminal facilities for the Flying Tigers Airline. It estimates that the fork-lift truck has saved fully 75 per cent of the time formerly required to unload cargo and to transfer it to waiting delivery trucks. Also, the Clarks are rented to other airlines when there's need for their unique abilities.

WRITE FOR MATERIAL HANDLING NEWS. It gives you "hot news" about how others everywhere are increasing production, decreasing costs. Packed with factual reports, fully illustrated. A request on your business letterhead puts you on our complimentary circulation list.

Fast loading and unloading of freight has materially reduced ground-time of Flying Tiger cargo planes, with corresponding increase of flying time.



For towing planes to the hangar for servicing operations the husky Clarktor-6 is ideal. Pacific Airmotive rents its Clark machines to its airport neighbors when they are needed.*

CLARK ELECTRIC AND GAS POWERED FORK TRUCKS AND INDUSTRIAL TOWING TRACTORS

INDUSTRIAL TRUCK DIV., CLARK EQUIPMENT COMPANY BATTLE CREEK 69, MICH.
REPRESENTATIVES IN PRINCIPAL CITIES THROUGHOUT THE WORLD
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GEARS AND FORGINGS · RAILWAY CAR TRUCKS · ELECTRIC STEEL CASTINGS
FRONT AND REAR AXLES FOR TRUCKS AND BUSSES · METAL SPOKE WHEELS · TRACTOR UNITS

NEW PRODUCTION AND PLANT EQUIPMENT

For additional information please use coupon on page 180

(*Continued from page* 244)

J-46—Horizontal Drilling Machine

Produced by Zagar Tool, Inc., Cleveland, Ohio, is a special horizontal drilling machine with two gearless drill heads and two hydraulic drill feeders, used in the making of small ⅜ in. square steel inserts for an over-riding clutch assembly. The inserts are produced in large quantities and drilled and countersunk on both sides. In these parts, made from extruded bar stock, holes are drilled and countersunk before the parts are cut off to length.

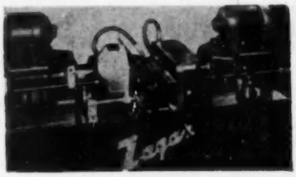
The operation consists of using two drill heads horizontally, drilling 20 holes in the first station of a manually indexed jig, and countersinking 20 holes in the second station. The parts in bar stock form are progressively indexed through the jig to drill and countersink 20 pieces at one time.

The machine is entirely automatic. The speed of the operation is set to the tempo of the operator manually indexing and positioning the extruded stock. The machine has a potential production of three cycles per min or 3600 completed holes per hr.

This same type of tooling can be adapted to a great variety of parts where opposed drilling is necessary, the company states.

The hydraulic feed units are of ample proportions capable of drilling as many as thirty ¼ in. holes in steel. The feed can be controlled with either pilot valves or electrical limit switches for cycling any sequence of automatic operations. The drill feed is regulated through hydraulic flow control valves, and the electrical circuits are installed to J.I.C. specifications with safety interlocks. Hydraulic reservoir, hydraulic pump, and hydraulic motors are located in the base of the machine and are completely enclosed.

The machine is universal and can be used on different setups.



Zagar special horizontal drilling machine

NEW PRODUCTS

FOR ADDITIONAL INFORMATION regarding any of these items, please use coupon on PAGE 180

K-88—Pressure Block Gage

For measuring the rolling pressures on continuous strip mills, Pratt & Whitney, Division of Niles-Bement-Pond Co., West Hartford, Conn., is marketing a new P&W Electrolimit pressure block gage. The pressure blocks are mounted on the mill housing between the top bearing and the screw or between the bottom bearing and the housing. Two gages are required for each mill stand. One gage is on the drive side and the other is on the operating side.

The pressure block gages are pre-

Pratt & Whitney Electrolimit pressure block gage

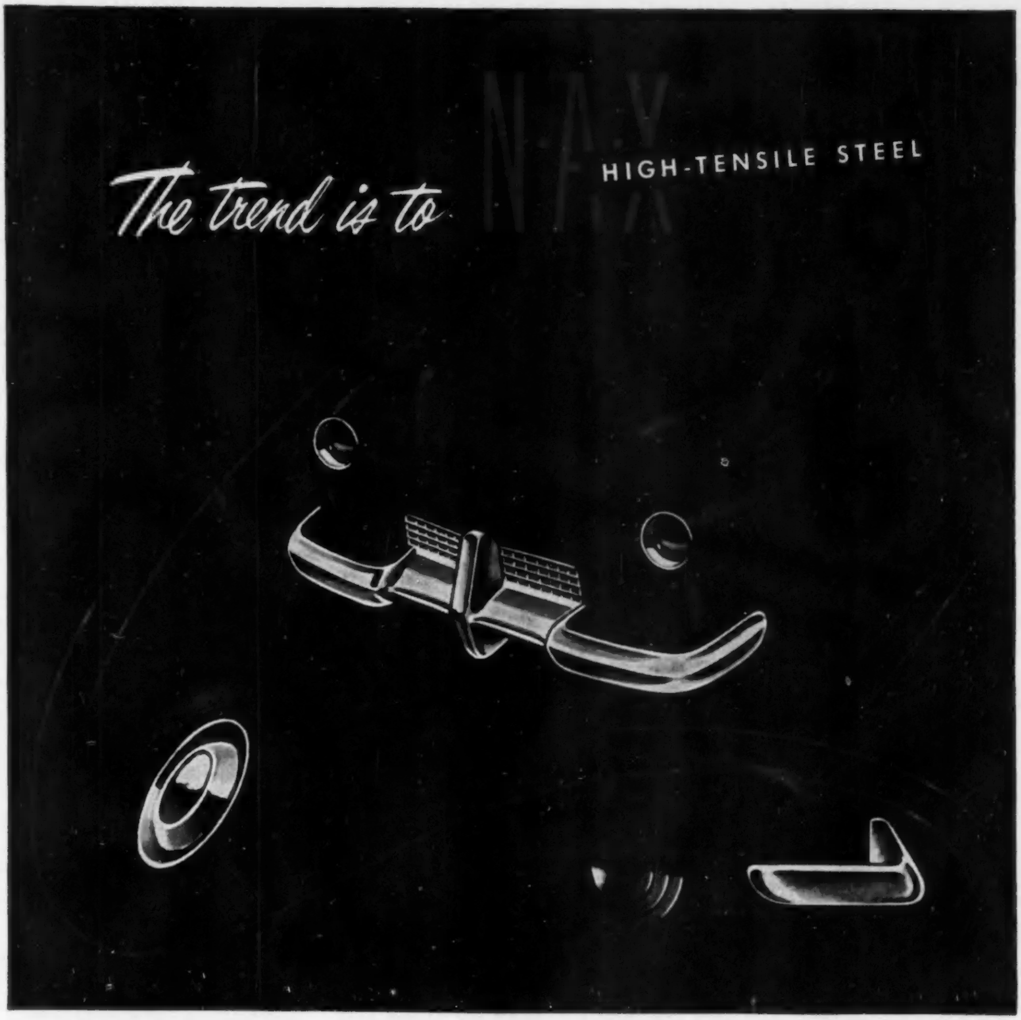
tested on a testing machine such as that at the Bureau of Standards and they may be installed as received without further calibration. This precalibration permits the pressure block gage to be moved from one mill to another. The pressure measurement is obtained by accurately measuring the compression of a ring and this measurement is converted to pounds pressure through the medium of the testing machine. A temperature compensator incorporated in the gage maintains accurate readings over a wide temperature range.

Electrolimit pressure block gages are available in capacities from 5000 to 3,000,000 lbs.

K-89—Rayotube for Radiation Work

A new Rayotube put out by Leeds & Northrop Co., Phila., Pa., provides quick sighting and stability in drafts and hot spots for work in radiation pyrometry. Built to work with all Micromax and Speedomax Rayotube instruments, this advanced design detector is unusually easy to apply, especially to such equipment as slab furnaces, soaking pits, open-hearths, ceramic kilns and wherever operating conditions are severe.

(*Turn to page 250, please*)



Since 1940, when Great Lakes Steel pioneered the application of high-tensile, low-alloy steel to cold-stamped automobile bumpers, there has been a growing trend to N-A-X HIGH-TENSILE steel in the automobile industry.

Today, every car manufacturer is using the inherent better properties of N-A-X HIGH-TENSILE steel for some part of his automobile.

Bumpers and grilles—hoods and fenders—body panels and deck lids—frames and bracings—wheels and hub caps represent a few of many applications of N-A-X HIGH-TENSILE steel to the modern car.

MAKE A TON OF SHEET STEEL GO FARTHER
Specify—
N·A·X
HIGH-TENSILE STEEL

N-A-X HIGH-TENSILE MEETS ALL REQUIREMENTS OF S.A.E. 950

GREAT LAKES STEEL CORPORATION N-A-X ALLOY DIVISION • DETROIT 18, MICHIGAN
Unit of National Steel Corporation

NEW PRODUCTS

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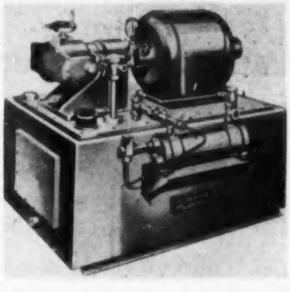
A quick-sighting optical system lets the user select a desired target easily, and then check the sharply-defined area which the Rayotube sees. Increased sharpness is also of benefit when radiation comes from the end of a closed tube.

Hermetically sealed construction at lens, window, and leadwires keeps out dust and gases. The new design guards inherent accuracy and stability, even with high or rapidly changing Rayotube housing temperatures.

Designed for easy, low cost replacement, the new Rayotube fits all existing Rayotube mountings. The unit requires no protection against high ambient temperature unless its housing temperature exceeds the very high figure of 350 F. Below that point, any previously installed water- or air-cooling can be turned off or disconnected.

K-90—Oil-Hydraulic Pumping Units

To meet a wide range of fluid power requirements for machine tools and other industrial equipment, the Denison Engineering Co., Columbus, Ohio, presents a completely new series of oil-hydraulic pumping units for regulative pressures up to 5000 psi. These high pressure units are available in 22 models designed to specifications recommended by the Joint Industry Conference, hydraulic standards for industrial equipment.



Denison high pressure oil-hydraulic pumping unit

Three series of hydraulic pumps are offered. These are of axial piston type and may be for either constant or variable volume. The 600 series pumps deliver up to 9 gpm at 1800 rpm in a pressure range up to 5000 psi. Pumps

White
DIVCO
CHEVROLET
Ford
MAXIM
Spicer
UNIVERSAL JOINTS
...preferred by ALL
truck manufacturers
DODGE
TRUCKS
PETER PIRSCH
& SONS CO
AUTOCAR
Coleman
Sterling
GMC
DIAMOND T
Peterbilt
WALTER Snow Fighters
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HENDRICKSON
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Chosen for their outstanding 46-year continuous service record unequalled in the industry.
SPICER MANUFACTURING • Division of Dana Corporation
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46 YEARS OF
Spicer
SERVICE
TRANSMISSIONS • PASSENGER CAR AXLES • CLUTCHES • PARISH FRAMES • STAMPINGS
FORGINGS • TORQUE CONVERTERS • PROPELLER SHAFTS • SPICER "BROWN-LIPE" GEAR BOXES
UNIVERSAL JOINTS
RAILWAY GENERATOR DRIVES

NEW PRODUCTS

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of the 700 series are rated at 20 gpm at 1200 rpm for requirements up to 5000 psi. The 800 series provide a maximum 35 gpm at 1200 rpm for service up to 5000 psi. The variable volume pumps are available with a choice of handwheel, pressure compensating, stem or cylinder control of oil delivery. The constant displacement pumps are basically of the same design and construction, exclusive of the controls.

Among available optional equiment is a heat exchanger attachment for cooling oil in the hydraulic system, and a vacuum gage for easily checking the condition of the oil filter within the reservoir.

K-91—Towing Tractor

A new towing tractor called the Clarkette-5 which need not be ridden to be operated, and which despite its comparative tininess will tow ten tons

Clark towing tractor, the Clarkette-5, being operated by order-picker walking alongside

on trailers over a level course at speeds from 1 to 6.5 mph., is announced by the Industrial Truck Division of the Clark Equipment Co., Battle Creek, Mich.

The driver can operate the machine while walking on either side of it, thus facilitating order-selection work, for which the tractor was designed. With this feature, "pulling" or "picking" items is changed from the off-again-on-again walk-and-carry category to one of smooth flow, the company points out. Only one man need be employed to a tractor and train.

A combination clutch-and-throttle control bar extending across the width of the Clarkette-5 above the cowl, makes possible ease of control and driving while the driver is walking. By simply moving the bar forward, the driver can move the tractor and train a few feet at a time, or from item to item in the order-selection line. The weight of the train acts as a brake, giving the driver maximum time to pick and place items on the trailers.

If positive braking is necessary while the driver is walking, he touches a foot to the brake bar at the rear of the driving platform. The parking brake is actuated by electricity and is controlled by a toggle switch on the instrument panel.

Steering is unnecessary when the Clarkette-5 is driven by a walking driver on a flat surface, since the castered steer wheel insures perfect tracking once it is positioned. The single steer wheel is said to give the machine exceptionally small turning radius and narrow aisle maneuverability.

K-92—Industrial Trailer Wheels and Casters

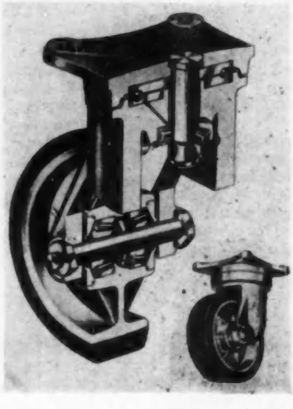
Aerol Co., Inc., Burbank, Calif., has placed on the market a new range of heavy duty industrial trailer wheels and casters, developed primarily for power towed equipment. Available in both rigid and swivel casters, they are cast of prime aluminum alloy and constructed to reduce clutch wear, battery

NEW PRODUCTS

For additional information please use coupon on page 180

strain, and mechanical fatigue on power towing equipment.

The wheel provides a practical tread contour and shore hardness to ensure minimum rubber displacement under load. The tread is stated not to chip, gouge, or adopt a permanent set. Aerol rubber tread stock being identical to that used in heavy duty roadbuilding equipment tires.



Aerol heavy-duty industrial trailer wheel and caster

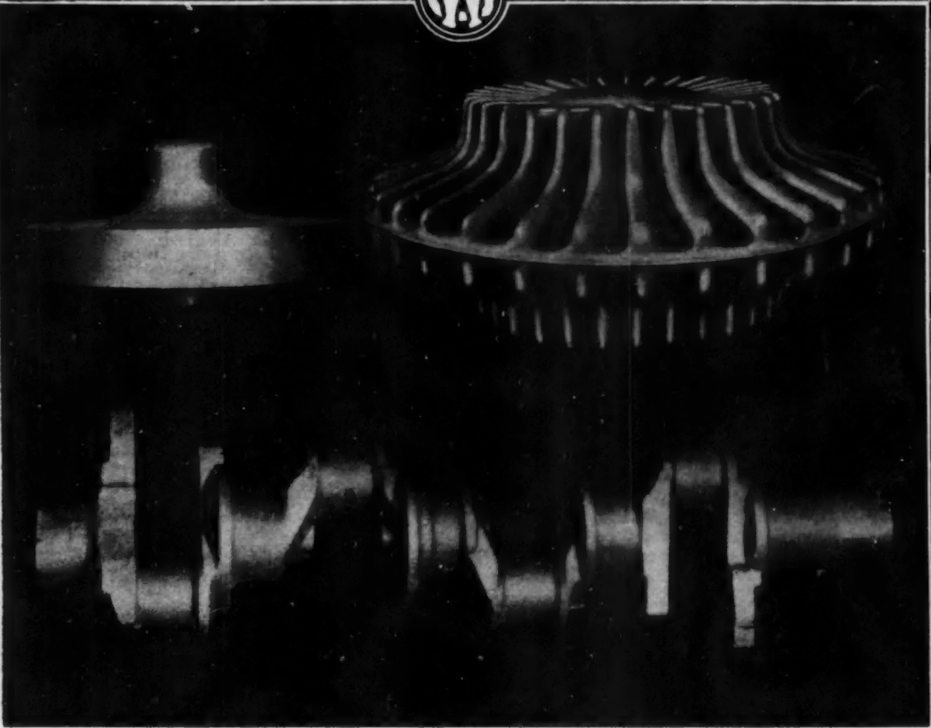
Like the caster, Aerol heavy duty industrial wheels are permanently sealed and lubricated with Lubriko Master Lubricant M-21 to provide maintenance-free service. Condensation will not form in the air-tight, water-tight wheel hubs or swivel caster rigs, nor will steam under pressure or developed vacuum disturb or destroy the sealing features claims the company. Grease fittings are neither required nor installed.

These heavy duty casters and wheels are available now in four different mountings—caster mount, inside mount, outside mount and stub axle outside mount.

K-93—Lathe Tool Holder

A new tool holder for lathes, designed by W. H. Sackman Co., Inc., Phila., Pa., rigidly holds wide tools on comparatively narrow bases with complete absence of chatter. The holder can mount two tools, and by swinging end for end, all lathe operations such as threading, forming, cutting-off, etc.,

(Turn to page 258, please)



SUN "JOB PROVED" PRODUCTS CUT COSTS,

Sun products have been "Job Proved" in the lubrication of almost every type of mining, manufacturing, power, and transportation equipment . . . in refrigeration and air-conditioning . . . in metal cutting, tempering, and quenching . . . in the processing of textile fibers, leather, natural and synthetic rubbers . . . in the impregnation of electrical, electronic, and packaging materials of many kinds.

To help you solve your production problems, Sun Oil Company offers a wide selection of "Job Proved" petroleum products, plus the experience of Sun Engineers. Their know-how and detailed product information are yours for the asking. Call your local Sun office, or write Dept. AA 3.

SUN OIL COMPANY • PHILADELPHIA 3, PA.

***In Canada:* Sun Oil Company, Ltd., Toronto and Montreal**

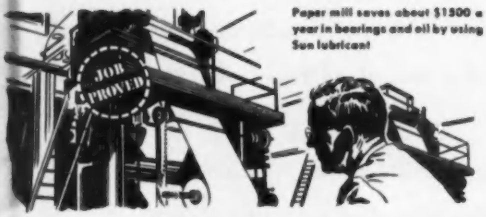
INDUSTRIAL OILS

SUNVIS 900 OILS—High-viscosity-index, paraffinic-type oils—of uniform 0 F pour point—fortified against rust, corrosion, oxidation, and sludge. The finest available lubricant for turbines, hydraulic systems, and similar applications.

SUNVIS HD 700 OILS—High-viscosity-index oils containing additives which minimize oxidation and give detergency. Ideal lubricants for internal combustion engines subjected to continuous heavy loads under the most adverse conditions.

SUNVIS OILS—Solvent-refined paraffinic-type oils of uniform high viscosity index, low pour point, and low carbon content. Especially suitable for application to long-time use in all types of industrial reservoirs and circulating systems.

SYNAVIS OILS—Low-pour-point, high-viscosity-index, inhibited oils, containing an additive which helps prevent formation of harmful corrosive and sludge-forming acids. Well suited for engines fitted with alloy bearings and operated at high temperatures.



Paper mill saves about $1500 a year in bearings and oil by using Sun lubricant

SOLNUS OILS—Well-refined straight mineral oils. Stand up under hard use for long periods of time. Recommended for use in machine tools, air compressors, certain types of diesels, etc.

CIRCO OILS—Used for general lubrication of industrial machinery when straight mineral oils are required.

SUNTAC OILS—100%-petroleum products which have been compounded to increase their adhesiveness. Recommended for general lubrication of all machines subjected to sudden shocks and load reversals. Cling to the parts to be lubricated.

STEAM CYLINDER OILS—High flash and fire point lubricants for either saturated or superheated steam conditions and for worm-gear speed-reduction units.

SUN CAR JOURNAL OILS—Dark oils meeting A.A.R. Specifications. For use in waste-packed bearings of railroad equipment.

SUN DELAWARE OILS—Dark oils for general lubrication on older types of industrial machinery.

SUNOCO WAY LUBRICANT—For use on tableways. Eliminates chatter and scoring . . . resists corrosion. Has good metal-wetting and adhesive properties, ample viscosity, and E. P. qualities.

SUN MARINE ENGINE OILS—Compounded with special emulsifying agents in order to provide adhesion to, and lubrication of, working parts in the presence of water. For the lubrication of bearings, eccentrics, crossheads, and various other parts of steam engines.

ROCK DRILL OIL—High-film-strength adhesive oil. For use in jackhammers, stopers, drifters, and similar equipment.

INDUSTRIAL GREASES

SUN CUP GREASES—Water resistant. For grease-cup and grease-gun application when service is normal.

SUN GUN GREASES—Smooth greases made with medium-viscosity oil. Stable under pressure in power and booster guns.

ADHESIVE PRESSURE GREASES—Won't drip or splash. Excellent lubricants for open-gear applications.

SUN DARK PRESSURE-SYSTEM GREASES—For power-driven central grease lubricating systems in heavy industries. Also used as a "medium cup grease."

SUN MINE CAR GREASES—Available in several grades. Suitable for both antifriction bearings and plain-bearing cavity-type wheels.

SUN MINING MACHINE LUBRICANT—Semifluid. For use where a light but adhesive grease is required. Resists separation and decomposition.

Chemical plant saves about $8000 per year by adopting Sun Pressure Grease

SUN ROLLER BEARING GREASES—For use on electric motors and generators and high-temperature machinery equipped with ball or roller bearings.

SUN GEAR COMPOUNDS—Black adhesive open-gear compounds and

"JOB PROVED" IN EVERY INDUSTRY

SUN PETROLEUM

SPEED PRODUCTION, IMPROVE QUALITY

wire-cable greases. Recommended for power presses, mining machinery, worn reduction mills, crushers, pump gears, etc.

SUNOCO TRACTOR ROLLER COMPOUND—For crawler-type tractors. Provides good lubrication with exceptional sealing qualities.

METALWORKING OILS

SUNICUT—Straight (non-emulsifiable) transparent cutting oils. Recommended for automatic screw machines and heavy-duty machining operations. Permit high speed production with excellent finishes, long tool life.

SUNOCO EMULSIFYING CUTTING OIL—A self-emulsifying oil which produces a stable white emulsion. Efficient and economical cooling and lubricating medium for turning, milling, drilling, and other metalworking operations on both ferrous and nonferrous metals. It is also an excellent grinding coolant.

SUN QUENCHING OILS—Specially refined oils designed to aid development of maximum physical properties in a wide variety of steels.

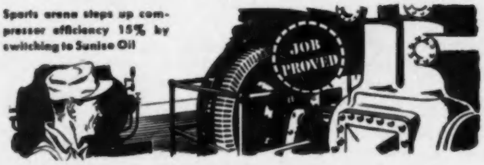
SUN TEMPERING OILS—Specially refined oils for tempering steel. Because of their low carbon content and stability under heat, these oils have an unusually long service life.

SUN ROLLING OILS—Straight and emulsifying oils which will permit maximum production in rolling steel, aluminum, brass, and copper.

SUN ANTI-RUST COMPOUNDS—Petroleum-base oils with chemical additives designed to prevent the rusting and corrosion of steel.

REFRIGERATION OILS

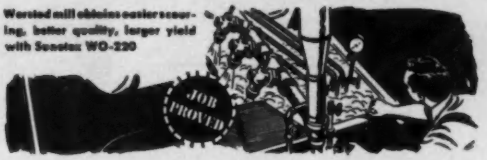
SUNISO REFRIGERATION OILS—Have extremely low pour points, extremely low wax-separating characteristics, a high degree of stability and long life. Initially neutral and resistant to formation of detrimental acids under service conditions. Suniso Oils are high quality oils suitable for both high- and low-temperature operations. The most widely used oils in refrigeration and air-conditioning.



TEXTILE-PROCESSING OILS

SUNOTEX TEXTILE OILS—Designed to impart certain additional properties to various forms of fibers during their processing from the fiber state into a manufactured product. All Sunotex textile oils are emulsifiable in water. Highest rating in fadometer tests.

SUN COTTON CONDITIONING OILS—Pale mineral oils which condition the cotton. They prevent waste by cutting down excessive amounts of "fly" (fine air-borne lint particles).



SUN ASBESTOS FIBER CONDITIONING OIL—Used for spraying on the asbestos during processing. Fibers are kept from being damaged or broken down, and harmful dust is minimized when this product is used.

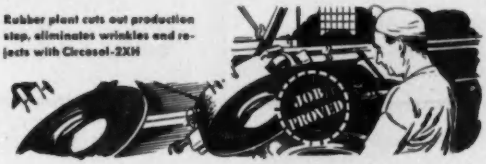
SUN CORDAGE OILS—Generally used alone, but are adaptable to various formulas used by cordage manufacturers. Selected products, highly compatible with additives.

RUBBER-PROCESSING AIDS

CIRCOSOL-2XH—An elasticator and processing aid for natural rubber and especially for GR-S. Outstanding for sponge rubber.

CIRCO LIGHT PROCESS AID—A processing agent and excellent softener for natural rubber, natural rubber reclaims, and neoprene synthetic rubber. Used for GR-S to some extent.

SUNDEX-53—An inexpensive product suitable for processing GR-S and blends of GR-S and natural rubber. An established processing aid for rubber footwear stocks and semihard rubbers.



CIRCOMAR-5AA—A black-colored product for processing natural and GR-S rubber used in tire-making. Also used in reclaiming natural-rubber scrap. Replaces asphalt fluxes. Free-flowing at room temperature.

WAXES

Sun's new wax plant was completed in 1949. Its many refining innovations and extreme flexibility permit new types of waxes to be manufactured in large quantities—a procedure heretofore impracticable. A wide range of fully refined paraffin and microcrystalline waxes will be "tailor-made" to meet the requirements of virtually all major industrial applications. Pilot plant samples of several grades are now available.

MISCELLANEOUS INDUSTRIAL PRODUCTS

SUN SOLVENTS—Sun Spirits for the thinning of paints, varnishes, and enamels, and for metal-cleaning . . . a pure, water-white petroleum solvent free of corrosive sulphur. Other Sun solvents with special properties are available for the chemical industry.

SUN LEATHER OILS—Mineral-base leather oils. Used for obtaining the desired tensile strength, proper temper, and controlled moisture content. Maintain a light even color . . . mix well . . . distribute evenly.

"JOB PROVED" IN EVERY INDUSTRY

PRODUCTS SUNOCO

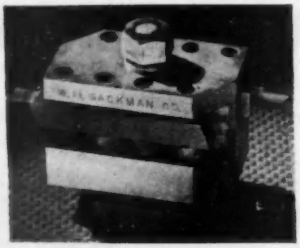
NEW PRODUCTS

For additional information please use coupon on page 180

(*Continued from page* 254)

can be performed. Two sizes are in production for use on 9 in. to 16 in. lathes. Larger sizes can be made.

Secret of rigidity is a series of adjustable posts, accommodating tools of different sizes and permitting further adjustment as the tool wears and is resharpened.

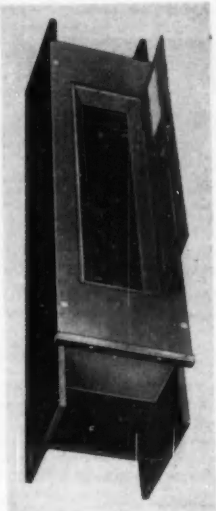


Sackman tool holder

K-94—Beam-Fitting Panelboards

A Line of narrow width NMO-XX circuit breaker lighting panelboards to fit into the web of 8 in. wide-flange structural beams are products of Square D Co., Detroit, Mich. This type commonly used beam has approximately a 7⅛ in. wide space between flanges to receive the lighting panelboard assembly. Square D's narrow cabinet design, measuring 6⅞ in. wide outside, allows ample clearance for installation.

The panelboard incorporates thermal-magnetic circuit breaker units that plug-in on cylindrical bus bars and are interchangeable with those of NMO panelboards, MO panelettes and MO-12 and MO-20 load centers.

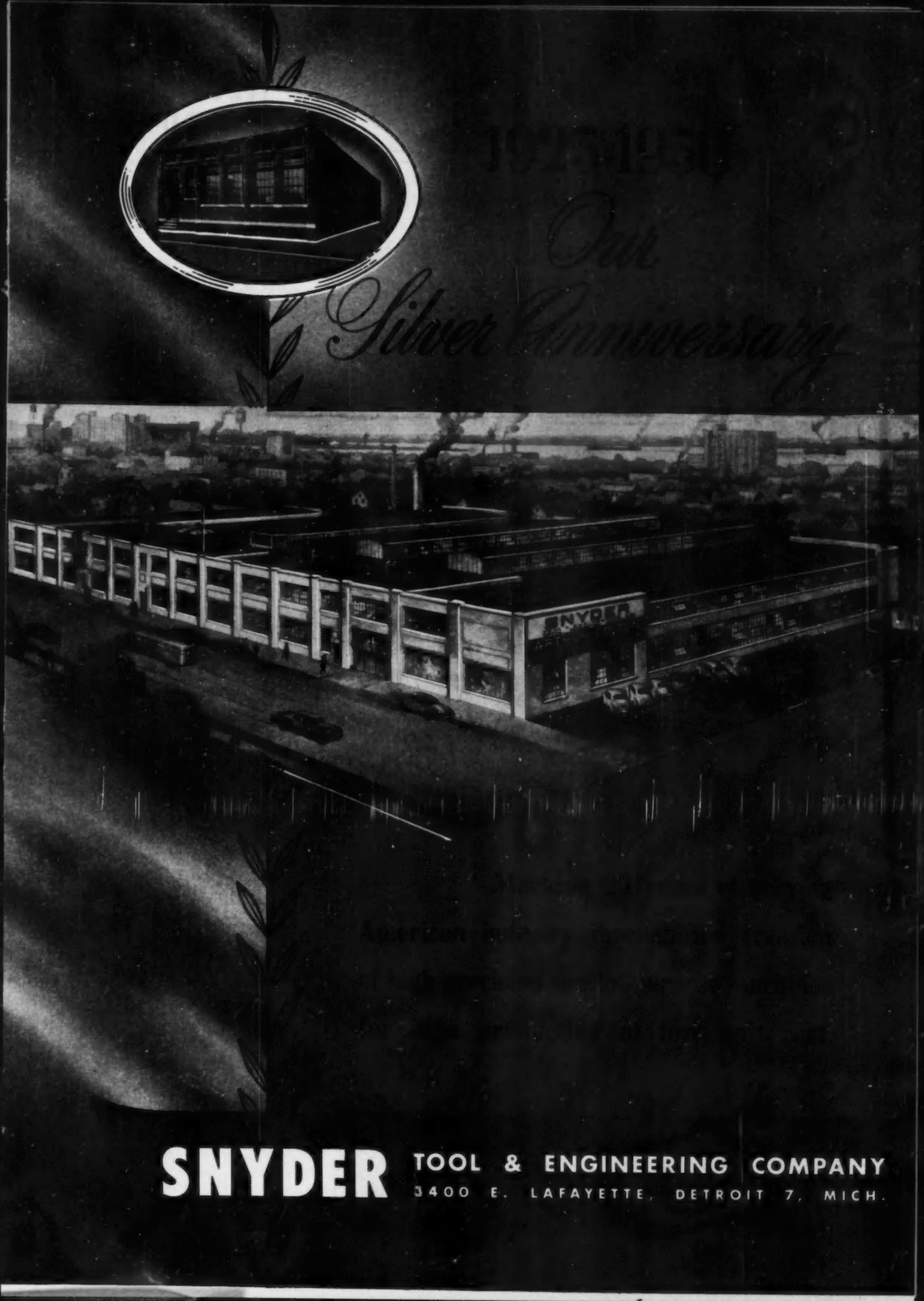


Square D narrow width NMO-XX circuit breaker lighting panel board fitting into structural beam

NMO-XX plug-in narrow width panelboards are available for both single phase, 3 wire, and three phase, 4 wire services with 15, 20, 30, 40 and 50 ampere branch circuits.

K-95—Glass Electrodes, Moisture-Proof

A new series of moistureproof glass electrodes has been developed by Leeds & Northrup Co., Phila., Pa., for L & N pH electrode assemblies of the pyrex glass and enameled cast iron types. To assure high insulation and low electrical leakage, electrode lead-wires are permanently attached, molded into the plastic electrode head. The electrode


Our
Silver Anniversary
SNYDER
SNYDER TOOL & ENGINEERING COMPANY
3400 E. LAFAYETTE, DETROIT 7, MICH.

NEW PRODUCTS

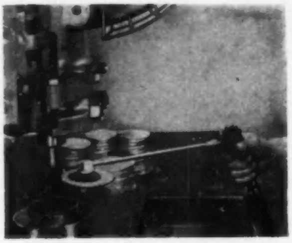
For additional information please use coupon on page 180

therefore maintains its fine accuracy even under conditions of high atmospheric humidity.

New pH-responsive glasses offer fast response, valuable on automatic control applications; low resistance, for accuracy at low temperature and for minimizing insulation problems; and sodium error so low that the same electrode can be used for any range of acidity or alkalinity, states the company.

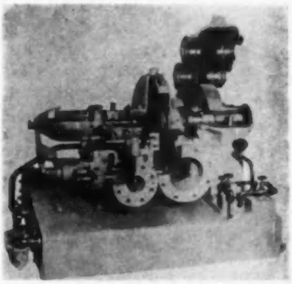
Electrodes are color-coded for three ranges of solution temperature; 0 to 30 C; 20 to 60 C; and 50 to 90 C.

K-96—Safety Press Feeder



Pres-Vac safety feeder offered by F. J. Littell Machine Co., Chicago, Ill., used to safely hand feed small parts into a press. The device produces a vacuum by passing compressed air through a venturi. Its use assures that operator's hands are never in the danger area, company states

K-97—Industrial Steam Turbine

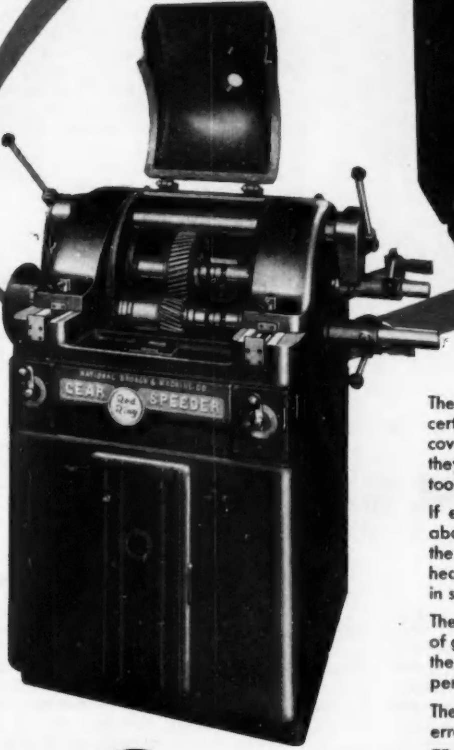


Westinghouse Gearturbine, type E

Type E industrial steam turbine with close-coupled, integral reduction gears for low-speed applications are available from Westinghouse Electric Corp., Pittsburgh, Pa. Equipment such as pumps, fans, compressors, and genera-

Gear errors and Gear noise

should be discovered long before the gears reach final assembly . . .



See this and other Red Ring equipment in
BOOTHS 601 AND 602
at the
ASTE "COST CUTTING EXPOSITION"
in Philadelphia, April 10-14

There is a profit in scrap for the scrap dealer, but most certainly not for the gear manufacturer who suddenly discovers that an entire lot of gears have to be scrapped because they fail to meet tolerance requirements or because they are too noisy.

If economy is important in your plant, the time to find out about machining errors is right at the machine which causes the trouble—not after all the subsequent operations including heat treatment have been completed and the gears assembled in some power unit.

The best insurance against high cost of scrap gears is the use of gear checking machines right down there in the plant where the gears are being produced and where they can be checked periodically by the machine operators.

The Red Ring Gear Checker quickly reveals any dimensional errors and the Red Ring Gear Sound Tester immediately puts an accusing finger on noisy gears. Both machines have laboratory accuracy, they can be used anywhere in the plant or inspection department and they prevent a great deal of waste.

Get all the details by writing for Descriptive Bulletins.

SPUR AND HELICAL GEAR SPECIALISTS
ORIGINATORS OF ROTARY SHAVING AND ELLIPTOID TOOTH FORM

NATIONAL BROACH AND MACHINE CO.

5600 ST. JEAN • DETROIT 13, MICHIGAN

WORLD'S LARGEST PRODUCER OF GEAR SHAVING EQUIPMENT

NEW PRODUCTS

For additional information please use coupon on page 180

tors can be driven at their proper speeds by these Gearturbines while the turbines operate at their most efficient speed.

The new units combine a compact speed reduction machanism solidly coupled to the Type E turbine and designed to operate as a single unit.

K-98—Whirlpool Action Parts Cleaner

A new Whirlpool cleaner for automotive and industrial cleaning has been put out by the J. P. Mfg. Co., Youngstown, Ohio, for use in motor rebuilding plants. For cleaning motor blocks, crankshafts, and many other parts, the cleaner is said to remove sludge, varnish, gum and carbon deposits created by diversity of lubricants used over the years in old motors. It also removes rust in the cooling systems caused by heat, friction and oxidation.

In operation a propeller drives all the solution at a rate of speed between 50 and 60 mph to build up tremendous pressure against all external and internal surfaces of the materials to be dissolved and forcibly removed. The cleaner traps all sludge, grit and varnish deposits into a drawer in a lower compartment through a hole in the center of the cleaner. The sediment pan in this drawer can be removed and cleaned out in ten or fifteen minutes while the solution in the cleaner is at 200 F. To do this the operator screws a plug into the center hole of the tank retaining the solution.

The cleaner basket, with a capacity of 1500 lbs, is rotated by a separate motor at a very slow speed. This allows the solution to strike the materials to be dissolved from all angles. The Model 250-G is equipped with an electric crane, weight capacity 1500 lbs, which will swing a loaded basket in a complete circle.

The cleaners can be supplied with gas, steam or electric heaters which work automatically at any set temperature. Flue pipe for the gas burner is built into the tank completely and acts as an additional heater for the solution which completely surrounds it. The flue pipe can be used as a crane assembly support, permitting the crane to perform a circle without additional attachments.

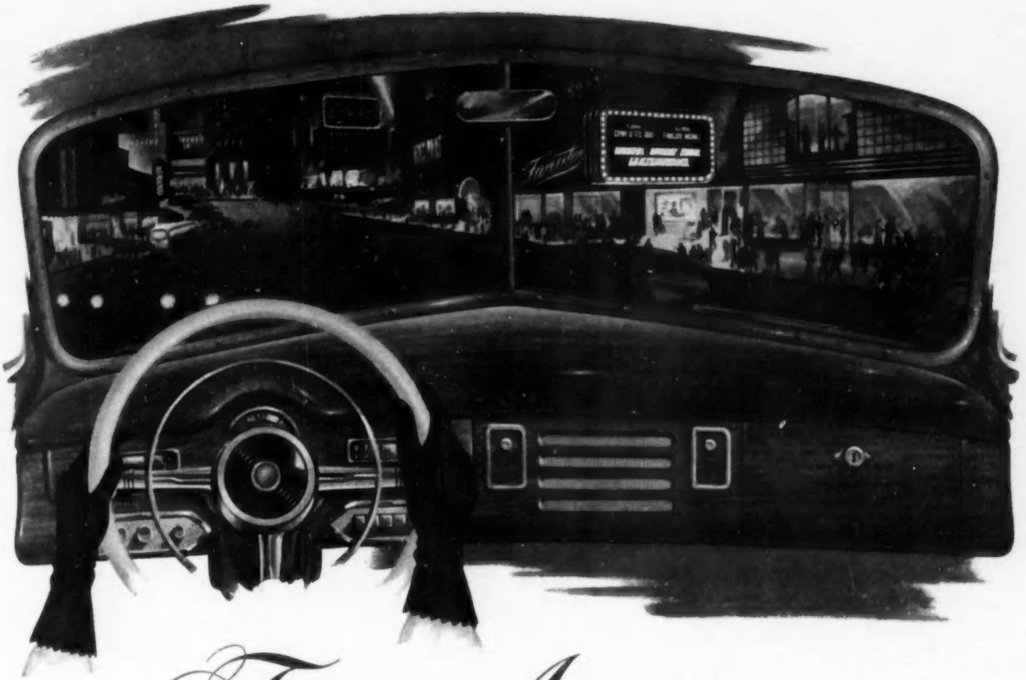
K-99—Nylon 2-Ply Inner Tube

A tire inner tube developed by United States Rubber Co., New York, N. Y., is reinforced with two plies of nylon cord. In event of puncture the nylon squeezes rubber around the puncturing object, changing what would be a sudden flat into only a slow leak. Called the U. S. Royal Nylon Life-Tube and engineered for the smaller rim diameter and larger body of the modern tire, its strength compared to conventional tubes is said to be exceptional.

K-100—Variable Speed Combination Sheaves

Five new sizes of wide-range variable speed combination sheaves produced by Speed Selector, Inc., Cleveland, Ohio, cover speed and load capacities up to 7½ hp with speed changes as high as 7:1. These combination sheaves produce wide variations of speed between fixed-center shafts through use of standard V-belts. The new 3, 4, 5, 6 and 7 in. single-groove sizes are each available in two types, spring-loaded and controllable. This permits combining small driving sheaves with larger driven sizes for low speed requirements, or to use large driving sheaves with smaller driven sizes for high speed ranges. The new 8 in. size, built with double grooves, is for the larger horsepower requirements, and is not designed to be com-

(*Turn to page 300, please*)



Feature Attraction . . .

● There's always a "good show" on for folks in the front seat of a car equipped with an instrument panel that's been wood-grained by Motor Products. The reason? Such an instrument panel's richly attractive beauty makes it the feature attraction of any car's interior.

What's more, because the instrument panel is a focal point of interest to every new car buyer, automotive manufacturers demand that it possess outstanding eye-appeal.

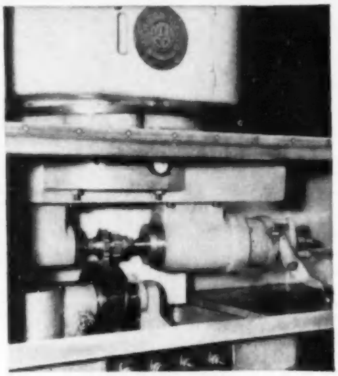
Long experience in the metal finishing field, and in the highly specialized application of wood-graining to window moldings, glove compartment doors, and other formed metal parts, has equipped Motor Products for the role of leader in this field. Consult us . . . without obligation.

MOTOR PRODUCTS CORPORATION

11801 Mack Avenue • Detroit 14, Michigan

CUTTING GEAR COSTS ISN'T *Difficult*

here's how one producer did it . . .



STEP NO. 2 **He reduced total cutting time and tool costs by ADDING underpass gear shaving.**

Time for hobbing plus underpass gear shaving on Michigan 870s is only 85% of previous cutting time.

Tool cost for both operations is less than for tools used previously.

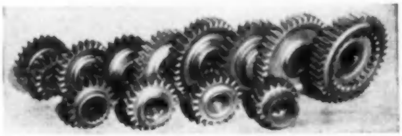
STEP NO. 3 **He reduced pre-shave cutting and down-time *(and pre-shave tool costs)* with a Michigan Shear-Speed machine.**

Cutting time is now only a little over a minute per gear (heavy duty gears). Equals output of 8 to 10 other gear cutting machines.

Operator effort reduced (operator actually "works" only one hour out of eight).

Down-time for change-over for Shear-Speed is below that on previous machines for same output. 70% of gears for 3 transmission types now cut on this one machine.

Entire cost of tools (initial and replacement) for the Shear-Speed were more than paid for by savings in sharpening time alone.



QUALITY? The complete new "Michigan" setup according to the gear producer gives him: More accurate involute and spacing (better contact); longer life; *variation off shaving machines of only plus or minus 0.0001 in.*

STEP NO. 1 *Oh yes, we should have put this first. Step No. 1 was to call in a Michigan Tool Company representative.*

COMPLETE from blank to finished gear EQUIPMENT

MICHIGAN TOOL COMPANY 7171 E. McNichols Road Detroit 12, U.S.A.

Aircraft Riveting

(*Continued from page* 176)

growth due to the riveting or dimpling.

5. Pin riveting, swelling of the rivet shank to make friction grip without protrusion at or use of an upset head, is still confined to special nut plate applications and is not in general use at NAA.

6. Joining of thin skins with large size rivets invariably leads to wrinkles and a very rough looking exterior due to sheet growth. Good practice dictates that larger rivets should be in combination with heavier gauges of sheet or the resulting appearance of the surface will require the addition of stiffeners of no other value than to preserve finish. Airframes can ill afford extraneous parts.

7. When riveting cloth, rubber or felt sheets it is necessary to provide a hard surface for the head to bear against and this is usually done by the addition of a washer or metal strip. Heavy thicknesses of soft material should have space collars to support the rivet. In any event, soft rivets should be specified.

Riveting Machines

Riveting machines are the greatest source of economy in sheet metal joining. Those which are in use or projected use at North American are: the Erco automatic riveter (punches, dimples, feeds and upsets); the General Drivmatic (drills, countersinks, feeds and upsets); the Automatic (feeds and upsets); the One Shot (upsets only), gang squeezers (upset a line of rivets), stationary squeezers (dimple or upset); and portable squeezers (dimple or upset). Whenever possible, joints should be designed with the dimensional limitations of the automatic machines in mind although when weight would be sacrificed in order to accommodate to the machine, a careful analysis must be made involving quantities of assemblies and rivets, actual weight increase, and costs involved. No general statement can be made regarding this decision as each case is open for individual consideration.

Whenever a joint contains six or more rivets and they are accessible for automatic riveting, the economic advantage lies with the machine over hand operation, but because of the many factors involved in manufacturing it may not be feasible to route each such case through the automatics. Needless to say, the more airplanes involved in a contract, the more advantage there is to tooling for and using the machines. A definite quantity can not here be set forth for an economical break point, for each cluster must be carefully analyzed by the Planning Group before the decision can be made. For the designer, good practice would call for all his design to be adaptable to automatic machines.

Machine limitations noted herein re-

(*Turn to page 266, please*)

sult solely from riveting experience at North American and are not intended as general recommendations.

Erco

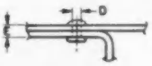
The machine manufactured by the Engineering and Research Corp. for punching, dimpling and riveting in almost a continuous operation cycle, is particularly adaptable to the riveting of flat or somewhat contoured sheet assemblies such as beam shear web—stiffener combination, fuselage frames, rib assemblies, skin panels, and doors. Protruding head rivets can be driven by the machine as well as the flush type. Fairly bulky assemblies are adaptable to the Erco as various types of jigs, brackets, tables and hangers may be used to support the work in process. The operation of the Erco is such as to require but one operator for even the largest assemblies. Foot pressure on the control valve pedals is the entire operating effort, leaving the operator's hands free for handling of the work. No previous drilling, dimpling, or matching of holes is necessary. It is able to punch and rivet up to 3/16 in. rivet diameter, dimple up to 5/32 rivet diameter, and handle any type of head, though only one type in one setup.

Jigs for the Erco are usually in the shape of ⅛ in. magnesium plates stiffened by aluminum sheet channels or angles as required. Holes for locating the rivets are drilled in the magnesium. These holes then index with the stripper to accurately center the work, a mirror located below the work giving the operator the jig hole locations. Another hole locating method known as the paint spot method is accomplished by spraying black dots on the work sheet through a template. The black dots are then indexed to a spot from the light mounted on the Erco.

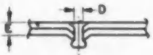
Drivmatic

An automatic machine which drill countersinks (but does not dimple), feeds and upsets the rivets in an almost continuous cycle is the General Riveter Drivmatic. Protruding head rivets can also be fed and driven by the machine. As sheet thicknesses become greater, resulting from increased design loads imposed, the applications for this machine become more numerous. Skin panel assemblies in fuselage and wing, bulkheads and other shear panels are a few of the items which can be fabricated on the Drivmatic.

Though the Drivmatic is not at present available in the shop of NAA, its acquisition is projected for future production.



E (MAX.)=125% D
FOR PROTRUDING HEAD



E (MAX.)=75% D
FOR FLUSH HEADS

When using the Erco machine, total material thickness is as shown here except in special instances. Maximum extrusion thickness to be Erco dimple riveted is ⅛ in. provided total material thickness is held. Dimpling of 75S-T6 extrusions is prohibited.

Design limitations for the Drivmatic are relatively few. Panels can be up to 120 in. wide (the throat depth on a particular model is 60 in.), the depth of work can be 5½ in. and the sheet thickness build-up one in. Up to ¼-in. rivets can be handled, and edge distances and clearances may be the same as for hand driving. The length of panel that can be assembled depends upon the tooling available, but panels up to 48 ft in length have been accommodated. Small channels can be joined to sheets by the use of an offset anvil but in order to facilitate production this practice should be avoided. Various lengths of rivets are readily employed, a change in diameter requiring but five minutes tooling time. It is adaptable to

(Turn to page 268, please)

Hi-Shear rivets. Rivet heads are driven uniformly flush and very little head milling is required.

Production rate is a principal feature of the Drivmatic. The machine is capable of 15 rivets a minute but a rate of 10 per minute is customary in production.

Chicago Automatic Riveters

These machines feed and upset the rivet in one stroke with considerable accuracy and high production speed. They do not punch or prepare the hole when riveting and this must be done previously. Automatics are capable of handling up to 40 rivets a minute under ideal conditions. Their use is standard on all small sub-assemblies calling for rivets up to 3/16 in. diameter. They are best suited to parts which have one type and size of rivet called out, but changing type or size is not a lengthy operation. A deep yoke permits riveting of large assemblies. Dual riveting automatics permit the fastening of nutplates in one operation.

Gang Squeezer

Row riveting may be accomplished on gang squeezers when dimensional or handling limitations do not permit the use of automatic machines. Squeezers do not punch the holes nor feed the rivets, and consequently do not have the automatic machines' high production rate. The gang squeezers in use of NAA will upset between six and 12 3/16-in. rivets at one time depending on machine capacity and spacing.

Stationary Squeezers

Fixed pneumatic squeezers may be used either for dimpling, hot dimpling, or rivet upsetting. After the rivets have been inserted in the holes, a high production rate is attainable.

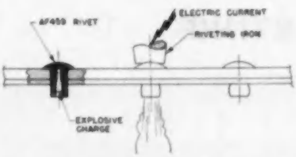
One Shot Riveter

A machine that upsets a rivet after it is hand fed into the work is the One Shot, so named because of its one quick, punch-like stroke rather than the smooth, slower, squeezing action of the stationary squeezers. Fast and accurate, it is used on a multitude of small assembly riveting jobs. Its 36-in. throat is deeper than other stationary riveters and can handle larger parts thereby.

Hand Riveting

By comparison with automatic machine riveting, hand riveting is a slower process. Two men are required when riveting with a pneumatic hammer, one to buck, whereas with the portable squeezers only the operator is necessary. As the airplane progresses in the assembly line, the skeleton soon outgrows riveting machine dimensional and handling capacities at which point portable squeezers and hammers take over.

(*Turn to page* 270, *please*)



Heading of explosive type blind rivet.

Blind Riveting

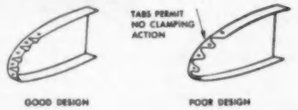
The advent of thicker skins, which do not allow peel-back for riveting, and double skins with sandwiched members between have, among other design trends, brought about increased use of blind riveting. At NAA experience has indicated that explosive blind rivets are inexpensive, strong, and quite reliable, and hence are used in large quantities.

Explosive blind rivets are generally upset by an electric heating iron. A few seconds application heats the rivet to a high enough temperature to cause the charge to explode in the rivet shank which in turn spreads out, forming the upset head. Another method of setting off the charge is by the heat produced by the friction generated by a rapidly revolving phenolic tip installed in an air drill. This method results in a very fast riveting rate and requires very little effort on the part of the operator. A high drill speed and light touch on the head produce the most heat in the shortest time.

Blind Rivet Design Considerations

1. Blind rivets, either pull or explosive type, have little or no clamping action on the sheets they join. As a consequence it is good procedure to design parts which, if they must employ blind rivets, have adequate provision for clamping the material together.

2. Grip length tolerances for blind rivets are critical in order to get proper upsetting action. Joint fits are, therefore, extremely important. The application of blind rivets to sloping surfaces should be avoided as should attachments of contoured and non-contoured parts.



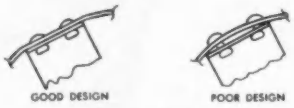
Blind rivets have little or no clamping action, therefore, parts should have adequate provision for clamping.

3. For dimple applications, blind rivet grip is equal to the material thickness plus the dimple height.

4. Care must be exercised in the design of blind attachment of heavy sheet structure as good joint fit is sometimes difficult to maintain. Adherence to (1) and (2) above will help this condition.

5. Light structure, on the other hand, may deform under blind riveting insertion or clamp up.

Other types of blind rivets are in various stages of development by the better known rivet type fastener manufacturers, in both protruding head and flush head types. The Design Standards Group is kept informed of progress in these experimental programs and as soon as a suitable standard is available information will be issued.



Application of blind rivets to sloping surfaces should be avoided.

Hi-Shear

The increasing loads imposed on sheet-fitting attachments have resulted in much greater use of Hi-Shear rivets.

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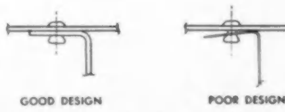
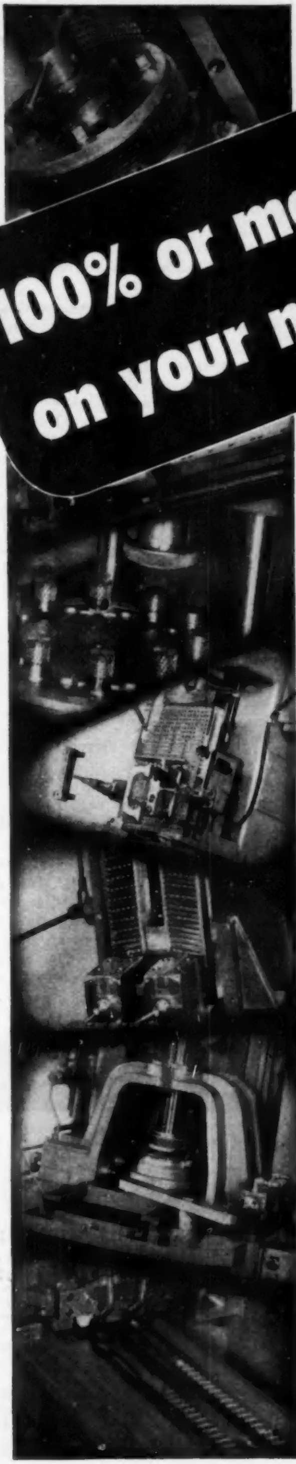
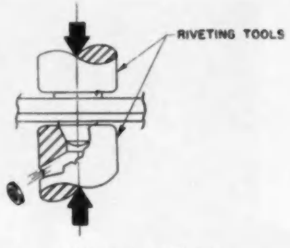


Light structures may deform under blind rivet insertion.

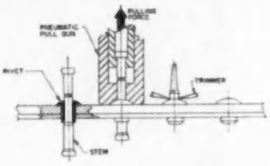




Hi-Shear rivet installation.

The assembled rivet consists of a steel pin and an aluminum alloy collar. Their use greatly reduces the weight of a joint because they take less space, requiring smaller fittings for specific number of pins, and are lighter than bolt-nut combination. Up to 50 per cent of attachment weight can be saved by their use rather than AN bolts. Shear design allowables are equal to those of corresponding size AN bolts.

The Hi-Shear rivet is commonly used at NAA. Its use is somewhat restricted on Navy type aircraft, as pointed out in the DRM, by the requirement to be replaceable on reassembly with standard bolts or screws and nuts.



Heading of pull type blind rivet.

The collar is upset by axial pressure from special riveting tools. This action simultaneously gives the collar its conical shape, fits the collar tightly into the groove on the shank and trims the excess collar material. The excess is ejected from the hole in the side of the tool.

BOOKS . . .

The new and revised Edition 49 of the Book HOW TO RUN A LATHE is announced by the South Bend Lathe Works. Containing 128 pages and more than 350 illustrations on the care and operation of metal-working lathes, this book may be used as a reference by experienced machinists or as a text by the apprentice or shop student.

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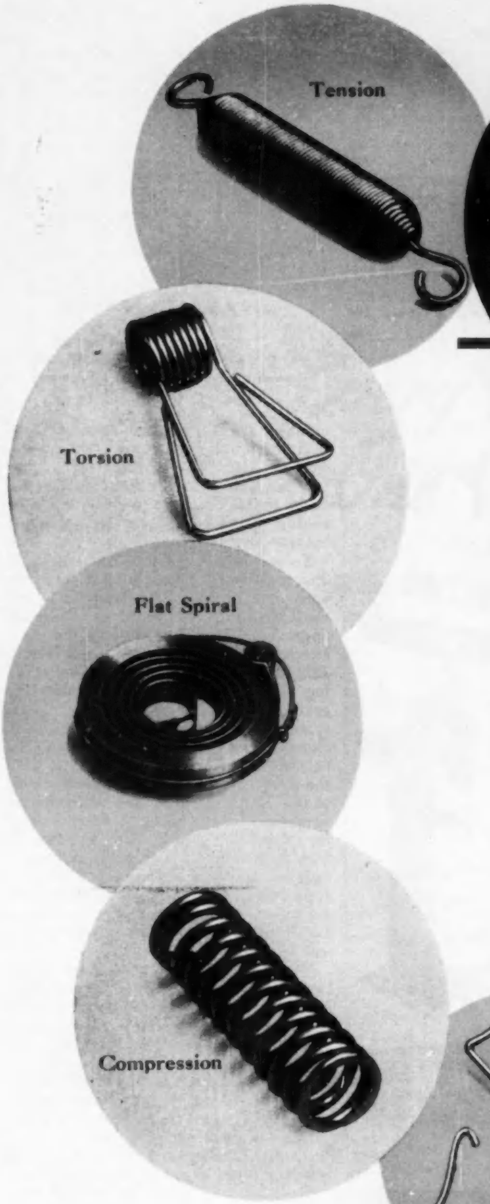

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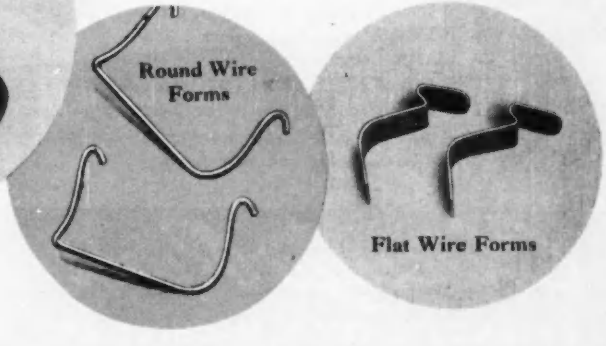

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Performance Number Scale for Rating Engine Fuels

DURING the early days of the war, it became apparent that a new method of rating anti-knock qualities of aircraft engine fuel was necessary. The project was undertaken by a group of American and British engine-fuel specialists representing the U. S. Navy, the U. S. Army Air Forces, and the British Air Commission. With the assistance of the petroleum industry and manufacturers of aircraft engines, these experts agreed upon the AN (Army - Navy) performance number scale which expressed anti-knock quality in terms of the engine.

In effect, the performance number scale was an extension of the more familiar octane scale, since it began at 100, which is the upper limit of the latter. The need for such a scale for aviation fuels was to become increasingly obvious as the war progressed. For, not only did the petroleum industry respond to the call for 100-octane fuels, but it produced aviation gasoline so high in antiknock value that they ran far off the octane scale.

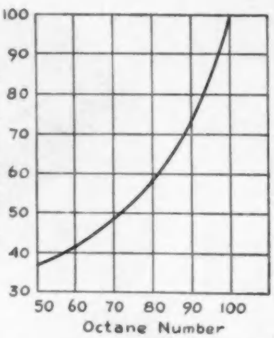

Fig. 1. This curve shows the relationship between octane and performance numbers.

Today, in the light of modern postwar fuels and engines, the AN performance number scale is taking on added usefulness. It continues as the only approved means of expressing the antiknock quality of aviation fuels above 100. But beyond that, it is also proving of some value when applied to gasoline below 100 octane.

One important development that enables the performance number scale to be used conveniently with fuels of less than 100 octane value is a curve which shows at a glance the performance numbers corresponding to octane numbers from 50 to 100. This is shown in Fig. 1. The curve is based on a simple relationship between octane and performance numbers, which chemists and engineers of the Ethyl Corp. Research Laboratories defined through the use of mathematical formulas.

With this octane-performance number curve, it is possible to consider octane numbers somewhat in a new light—to appreciate that they have "size" as well as numerical value.

From the curve, it can be readily seen that as octane numbers go higher they also become "larger" in terms of the added power that may be developed by the engine, as expressed by performance numbers. For instance, an increase from 50 to 60 octane number is a gain of only about five performance numbers, whereas an advance in the fuel's antiknock quality from 85 to 95 octane number gives an increase of almost 20 performance numbers.

Another significant factor is that the relative power output of an engine increases much more than just proportionately to octane numbers. The relative power output of an engine at 95 octane number, for instance, is more than 200 per cent of the value at 60 octane number.

The same non-linearity of the octane

(*Turn to page 276, please*)


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number scale with respect to associated engine performance, as brought out by performance numbers, also is evident when the octane number scale is applied to compression ratio.

Offhand, this scale might indicate that a fuel gain of, say, 10 octane numbers is the same at any level, as far as the engine is concerned.

Yet, as the curve in Fig. 2 illustrates, octane numbers, because they have "size" as well as numerical value, permit a far greater advance in compression ratio when added to gasoline at high level than at low level. The curve shows, for example, that an increase from 60 to 70 octane numbers permits a compression ratio increase of only 0.4. By raising an 85-octane fuel to 95 octane, however, the permissible advance in compression ratio is 1.3, or more than three times as much.

Many believe that the performance number scale will givea clearer indication of these possible engine power gains, if performance numbers can be made as applicable to unsupercharged automotive engines in the future as they now are to supercharged aircraft engines.

Whatever its future role in the case of fuels of less than 100 antiknock value, the AN performance number scale remains indispensable in fuel antiknock quality determinations above this level.

To appreciate the full significance of such standards as the performance and octane number scales, it need only be remembered that, however much they may vary in properties and composition, all gasolines have one all-important characteristic in common. When compressed in a combustion chamber, they reach a point where they will knock. And it is well known that knock, if unchecked, may lead to preignition and the destruction of certain engine parts.

Knock in either the aircraft or automotive engine is the same phenomenon—a sudden uncontrolled explosion in the unburned porition of the air-fuel charge. The well-planned compatibility of modern fuels and engines makes knock a rare occurrence if the proper fuel is used. But when it does happen in an automobile, knock is easily heard and generally can be overcome by changing to a gasoline that is of higher antiknock value.

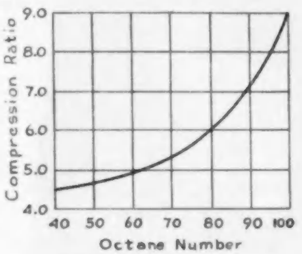

Fig. 2. Octane number increments at high level offer a greater compression ratio gain than at low level as shown in the above curve.

It is even more important that knock be avoided or eliminated in aircraft engines. The major safeguard that the pilot has against knock, of course, is the careful tailoring of fuels to fit engines and engines to fit fuels, on the part of the refiner and the engine maker.

The performance number scale is one tool that is available to help maintain this desired engine-fuel working relationship in aircraft.

In evaluating fuels above 100, the performance number scale takes the value of 100 which long has been assigned to iso-octane, adds the percentage power increase obtainable through successive additions of tetraethyl lead, and then expresses the whole in a performance number, such as 115, 130, etc. The assigned value of the various blends of iso-octane and tetraethyl lead indicates how much additional power an engine can develop when operated on fuels matching these blends than on iso-octane alone. These per cent power

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values, then, are performance numbers.

The curve shown in Fig. 3 is used in translating iso-octane plus tetraethyl lead into performance number.

It can be seen, for example, that iso-octane plus one milliliter of tetraethyl lead per gallon produces fuel of 125 performance number, while iso-octane plus 2.5 milliliters of tetraethyl lead result in a 142 performance number fuel. These performance numbers thus indicate that the aircraft engine can, within the limits of knock, produce 25 and 42 per cent more power from these fuels, respectively, than could the same engine operating on fuel of an even 100 antiknock value. Under some engine conditions, the use of tetraethyl lead as an antiknock agent increases permissible power output by percentages slightly greater or slightly less than those indicated by the curve.

Airplanes, whether military or commercial, operate over a wide variety of conditions, during which many factors may influence the tendency of a given fuel to knock.

One of the most important of these variables is the air-fuel ratio, or the amount of gasoline which is mixed with a given quantity of air in the engine. Under long-range cruising conditions (lean mixtures), only six lb of fuel may be mixed with each 100 lb of air. During the take-off or at other times when the engine is developing its maximum power (rich mixture, as much as 11 lb of fuel per 100 lb of air may be used.

Since engines differ in their choice of fuels, gasolines must be tested under more than one set of engine conditions in the laboratory to determine their knock characteristics.

That is why two figures are employed in stating antiknock quality of aviation fuels of more than 80 octane number. In the case of grade 91/98, for instance, the first number indicates the rating at lean mixture, or severe, conditions, and the second the rating at rich mixture, or mild, conditions. Engine conditions which give a low antiknock rating are termed severe, and those which give a high antiknock rating are termed mild.

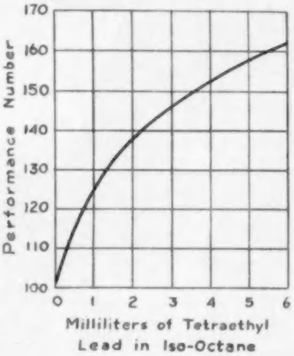

Fig. 3. Antiknock value of fuels above 100, designated by performance numbers, is measured in terms of reference blends of iso-octane plus successive additions of tetraethyl lead.

So it is with grade 100/130, to cite another example. The 100 indicates that this fuel, when operated under relatively severe engine conditions, will be equal only to iso-octane. But under mild conditions, the same fuel would be equal to iso-octane containing 1.28 milliliters of tetraethyl lead per gallon.

The antiknock value of an aviation fuel is determined much the same way as is the octane number of a motor fuel.

Of the two laboratory methods for establishing aviation fuel antiknock value, the Aviation method evaluates the fuel under severe engine conditions and the Supercharge method evaluates under mild engine conditions.

Each of these ratings is determined in a different standard single-cylinder engine. Both engines are similar in appearance, but are operated under different conditions. In the Aviation method, air is supplied at atmospheric pressure and the compression ratio is increased to produce knock. In the Supercharge method, the compression ratio is held constant at 7 to 1 and a

(*Turn to page 290, please*)

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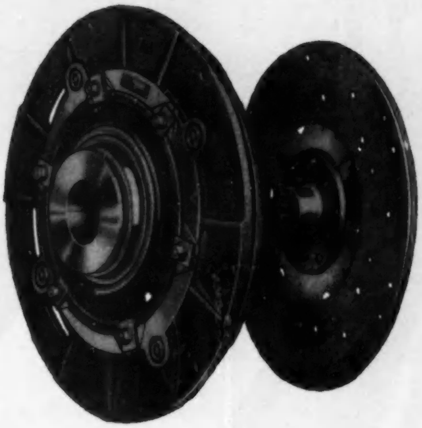

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Beginning of Torque Converter

(*Continued from page 224*)

that of the installation in the cruiser *Wiesbaden*. A decade later, the torque converter was ousted from the marine field by the toothed-gearing drive now in general use. Föttinger's hydraulic coupling is still being used aboard ship, however, chiefly as a means to suppress torsional vibration. Couplings and converters in units up to 50,000 hp have been built and installed in ships and in pumping plants for canal locks, etc. Minerva of Antwerp, Belgium, in collaboration with Föttinger, began to build torque converters for motor vehicles in 1912, but evidently without real success.

In 1924 Föttinger was appointed professor at the Berlin Technical College. A German engineer, Krukenberg, had built a railcar which was to be driven by an air propeller. This proved impractical, and Föttinger installed one of his hydro-kinetic torque converters in the vehicle. During the early thirties he also built a road vehicle equipped with a torque converter. This was taken over by the German Army and apparently "put on ice." However,

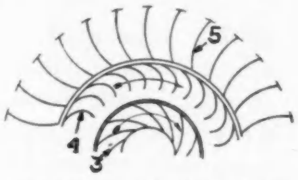

Fig. 2—Blades are curved as shown in this schematic sketch. 3—Primary turbine wheel. 4—Secondary turbine wheel. 5—Stationary return guide wheel.

numerous rail vehicles and locomotives were equipped with Föttinger hydraulic drives by Voith in Germany.

Successful use of hydraulic couplings (fluid flywheels) in road vehicles was inaugurated by Harold Sinclair and the Daimler Motor Co. in England in 1926, and of the torque converter by Alf Lysholm and the Ljungstrom Steam Turbine Co. in Sweden a few years later.

Professor Föttinger did not live to see the wide application of his inventions in the automotive field, which he is said to have predicted consistently. Toward the end of World War II, during the battle for Berlin, he was hit by a fragment from a Russian shell. He died a few hours later without having regained consciousness. His accomplishments as an engineer, an inventor, and a teacher received due recognition in Germany, and on the occasion of his 65th birthday he was awarded the gold commemorative medal of the Schiffbautechnische Gesellschaft, but he is said to have profited little financially from his inventions.

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British Government Indicates Types of Military Vehicles Needed

PROFITING by the experience gained in World War II, the Supply Department of the British Government has indicated to automobile manufacturers the types of vehicles that it requires for military use. Operating conditions are so dissimilar, that it is difficult, if not impossible, to build a vehicle that would be ideal for both peace and war. Some degree of standardization, however, is possible, and the Government would like to get down to a stock of 300 parts for one standard range of engine, compared with the 30,000 or more which had to be maintained during World War II.

The primary difference between civil and military types is the ability of the latter to operate off highway. It is not thought that the need for this ability will be lessened in any future conflict, for while most of the vehicles may operate in rear areas, air activity will always make it necessary for them to travel across country to seek sheltered parking places.

The ideal military vehicle must have a high power to weight ratio, and in order to use high torque, the highest possible adhesion should be maintained between tires and ground. There is, therefore, a preference for large wheel movements, large tires, independent suspension and rigid frames. As many wheels as possible must be driven. A very low first gear should be provided. A power to weight ratio of 20 bhp per ton is desirable. Desirable military features tend to increase unladen weight, with the result that a three-ton truck built to full military specifications may be expected to weigh about six tons unladen, and to require an engine developing about 180 bhp.

Ability to handle trailers is essential, and a standard system of power brakes on vehicles and trailers must be adopted. Special vehicles must be supplied with power take-offs. Ability to operate anywhere in the world, except extreme Arctic conditions, without any modifications, is necessary. Built-in heating and de-misting-deicing equipment, heat insulation for the cab, air-conditioning in some cases, excellent engine cooling, and special starting devices on the engine and battery are required. Wading and fording must be provided for. Temporary waterproofing is permissible, providing it can be done by the crew, and that it is kept to an absolute minimum. Shallow water up to two or three feet must be negotiable without delay. Lashing points are necessary for carriage by air and sea. The British military "musts" are as follows:

- It must be possible to fit chains;
- Engines must be dust-proofed;
- Tires and wheel sizes must usually be altered;
- Engine cooling must be made adequate for the tropics;
- All materials must be tropic-proofed;
- Electrical equipment must be radio-interference suppressed;
- War Department drawbar gear must be fitted at rear;
- Power take-offs required for certain classes of vehicles;
- Vehicle must be able to operate the system of brakes on the trailer it normally tows, and to connect its lighting system;
- Adequate storage space must be provided;
- Airportability requirements must be met.

The "shoulds" comprise: a standard range of engines as powerful as possible; engine adaptation for low temperature starting and operation; waterproofing of electrical components, using standard 24-v range of equipment; suppressors against radio interference; heat insulated cabs; battery heating; methods of converting a 4 by 2 into a 6 by 4 should be considered as the simplest way of greatly increasing cross-country performance. *(Next page)*

The report says that fuel, at present, must be gasoline, but adds that the "B" series engines in four, six, and eight cylinders will meet requirements from 80 to 160 hp, and that the Meteorite and Meteor in V-8 and V-12 will cover requirements from 250 to 810 hp. The Meteorite is a light-weight Diesel. A range of action of 300 miles on highways is required, this naturally implying an economical engine.

A synchromesh transmission is considered sufficient, with a wide overall torque range met by auxiliary gearing. It is preferred that this be in the main box, to provide a single gear control, instead of a wide range in two boxes controlled by two gear levers. In the heavier vehicles it should be possible to operate two power take-offs at once.

Frame rigidity in both bending and torsion is required without, however, too much weight. Chassisless or full stressed skin construction is not considered desirable, owing to maintenance complications.

In electrical equipment the insistence is on 24-v, waterproofing, and protection against radio interference. It is considered that the 24-v system is most desirable for starting under Arctic conditions and for radio operation.

The Supply Department directs attention to the advantages of independent suspension because of the more equal wheel loading it provides, and also its greater ground clearance. For crossing rough ground at speed, unsprung weight should be low, spring rate slow, and wheel movement large. Where independent suspension cannot be adopted, a transverse suspension for the front offers large wheel movements, cheapness and lightness. The six-wheel bogie system is favorably considered.

The Department is not dogmatic about six vs four wheelers. The cost and weight of a 6 by 6 is much greater, but the smaller wheels and tires give lower loading height and wheel arches and better steering lock and wider frame. For fairly small vehicles, the adhesion of a 4 by 4 may be better than that of six smaller tires and the ground clearance will be greater. However, the 6 by 6 has lower unsprung weight per wheel and the ability to fit overall chains is a major asset. In general 6 by 6 vehicles are better for loads of more than three tons and 4 by 4 for those under one ton capacity. Tires should be underrated, so that their imposed load is not more than two-thirds of their rated load.

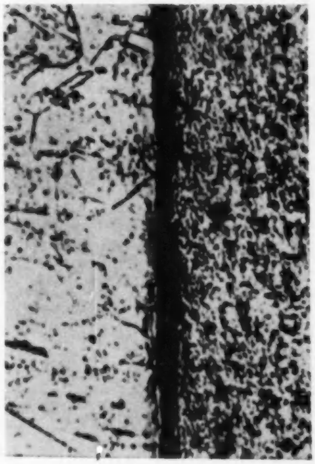
Recent Developments in Percussion Welding

HEAT treatment after welding is unnecessary when a new flash welding technique is employed for heat-treated aluminum, according to the *Reynolds Metals Technical Advisor*. The mechanical properties of high-strength aluminum are not materially reduced as the weld is less than 0.001 in. across and the metal adjacent to it is unaffected. Since the weld is so small, the joint is practically as strong as the parent metal. An important feature for some applications, such as tubing, is the absence of flash. The metal burned off during flashing practically vaporizes, leaving only a few small globules which can be blown out of tubing by compressed air.

This improved welding technique somewhat resembles the Vang percussion process. According to the *Welding Handbook*, percussive welding is "a resistance-welding process wherein a relatively intense discharge of energy and the application of high pressure (usually a hammer blow) occur simultaneously or with electrical discharge occurring very slightly before the application of the pressure of the hammer blow." Several variations of percussive welding have been developed through the years. First, it was used almost exclusively for butt welding small diameter wires as in electric light bulbs, using a low-voltage condenser as the energy source and a mechanical system that brought together the two parts to be joined to start the flow of energy, separated them for arcing, and then joined them by a hammer blow.

Next the condenser was replaced by a transformer whose primary was connected to a d-c source. When the primary circuit was opened, collapse of the electromagnetic field produced large currents in the secondary circuit which included the work, somewhat on the order of the stored-energy spot welder now in wide use.

The system was still complicated by the requirements for establishing contact, separating, and then hammering together the two parts to be welded. An advance was made in the process by



Micrograph of percussion-welded tubing joint. The weld zone is 0.0004 in. across. Grain structure adjacent to weld is unaffected except for small amount of cold work in the aluminum caused by the push-up force of 20,000 lb.

using condensers charged to a sufficient voltage to break down the gap between the parts, thus making it unnecessary to touch the parts against each other and then separate them.

Now further improvements have been made and while they can not be fully disclosed because of the patent situation, it can be said that stored energy

(*Turn to page* 288, *please*)

Design Horizons Unlimited

Looking for ways to slash production costs? Increase the modern beauty and practicality of your products? Step up sales appeal? Ostuco Tubing offers design horizons unlimited!

Manufacturers of kitchen ranges, radios, lawn mowers, and hundreds of other items, have greatly improved their competitive positions by switching to Ostuco Tubing. And possibilities are endless as the imagination.

You'll like Ostuco Tubing because it offers remarkable adaptability in shape and structure . . . maximum strength with minimum weight . . . excellent machinability . . . good finishing surface . . . smooth lines for smart up-to-the-minute styling.

But equally important are the benefits of Ostuco "Single Source" Service. Ostuco's complete modern facilities for manufacturing, shaping, and fabricating tubing, all in one plant—eliminate unnecessary freight charges, speed deliveries, assure high uniform quality.

Ostuco produces both seamless and electric welded steel tubing in a broad range of sizes and shapes . . . performs ALL types of forging and fabricating operations . . . supplies finished or semi-finished products that meet your most exacting requirements. Write direct or to our nearest Sales Office for free booklet "Fabricating and Forging Steel Tubing."

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Manufacturers and Fabricators of Seamless and Electric Welded Steel Tubing

***Plant and General Offices:* SHELBY 12, OHIO**

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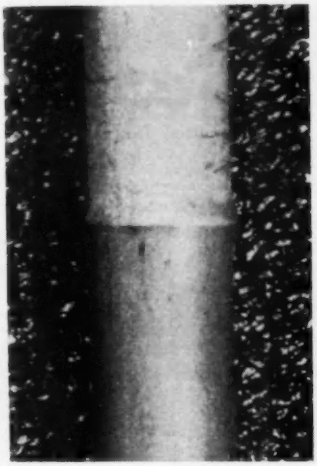
welding current is used, the amount discharged being carefully metered during the weld. This permits close control of the amount of metal melted at the weld interface. In order to obtain the impact desired immediately after application of the welding current, the work is hammered together by using the energy of air stored under pressure in a cylinder whose piston is connected to the moving electrode. An electric solenoid holds back the piston until its circuit is broken by welding control currents at the moment of impact, so that air pressure is then free to ram home the piston and movable electrode connected to it.

Every factor involved in the welding operation can be precisely controlled. The amount of metal melted is controlled by the amplitude of energy stored up and dissipated in making the weld. Movement of the electrodes and pressure exerted prior to the hammer blow can be controlled by conventional methods. Hammer blow timing can be regulated to extremely close limits by electronic circuits connected with the actual application of welding current so that it is applied at any desired time after application of the welding current. Force of the hammer blow can be adjusted by changing pressure of air in the cylinder.



Enlarged view of percussion-welded joint between copper and alloy type 3S-H14 aluminum tubing, 5/16-in. OD. This weld was made with 130 mfd of condensers charged to 2200 volts, discharging to the weld through a 1000:1 transformer and providing approximately 80,000 amp at 2.2 volts during the one-sec flashing period.

The welds illustrated were made in a machine of the type described above. Thickness of the weld zone is only 0.0004 in. Original grain structure adjacent to the weld is not changed. There is no internal flash on these welds.

Power stored in the condensers is sufficient to permit welding parts up to ½ sq in. in cross section. Adding capacitors would make it possible to handle still larger work.

Today's Cars and 30 Years Ago

A REVIEW of the 12 present makes of U. S. passenger cars whose ancestors were on the road in 1920 shows, according to *Automobile Facts*, that on the average—

Their price has dropped from $2,760 for four-door models to $1,895.

Their horsepower has risen from less than 49 to over 103.

They weigh 3309 lb today, or 300 more than in 1920.

Their overall length has increased from about 14 to about 17 ft.

In terms of the average U. S. industrial wage, it takes only 34½ weeks to earn the price of today's cars, where it took 92½ weeks back in 1920.

While the over-all width of cars has increased only about five in. since 1920, seats are over a ft wider and in some cases even more, because the body has been widened into the space formerly used only by fenders.

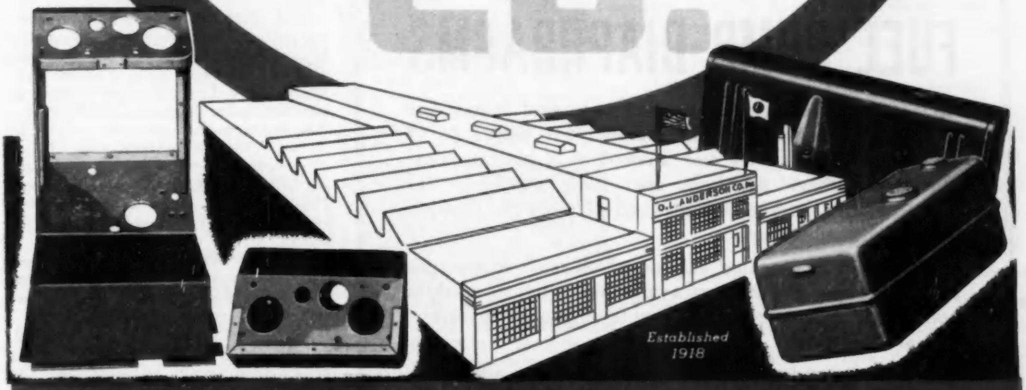
Where the car built in 1920 had a life of about 25,000 miles, the average car built today will travel more than four times that distance before it's finally scrapped.

A Distinguished Mark..

Representing a distinguished Business in its own field

For years this company has served many large Automotive and other outstanding firms that have always demanded quality expert workmanship and prompt service intelligently coordinated with a sense of responsibility to the clients served.

This means so much today and is appreciated.



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STEEL SUB-ASSEMBLIES • SAMPLE WORK • ENGINE COWLINGS

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Meaning of Torque

(*Continued from page 222*)

A radian is the angle which is subtended by an arc whose length is equal to the radius of the circle. Since a circle has 360 deg and the circumference of the circle is 2π (or 6.2832) times the length of the radius, it follows that a radian is equal to $360 \div 6.2832 = 57.3$ deg.

Suppose that a force of one lb acts on a lever arm one ft long, so that it produces a torque of one lb-ft. Then, if the shaft on which this torque acts turns through one radian, the force acting on the lever arm evidently overcomes the resistance to motion through a linear distance of one ft, and the work done is one ft-lb. If instead of multiplying the force by the linear distance to obtain the work done, we had multiplied the torque (one lb-ft) by the angular distance through which it overcame the resistance to motion (one radian), we would have obtained the same result, one ft-lb.

When the shaft makes a complete revolution, its angular motion is equal to 2π radians, and with a torque T applied to the shaft the work done is 2π T ft-lb. If the shaft makes n rpm, the work done in one minute is 2π n T ft-lb, and since one hp is equal to 33,000 ft-lb per min, the power transmitted is

$$hp = \frac{2\pi n T}{33{,}000}$$

The term "torque converter" was first used by Constantinesco in England during the early 1920's, and was applied by him to a device based on the inertia principle. In this unit a torque applied to the driving shaft sets a pair of masses in motion during a given angular motion of that shaft, and these masses are then brought to a stop and impart their kinetic energy to the driven shaft during a different (usually shorter) angular motion of the latter shaft. The angular motion of the driven shaft during which it receives the kinetic energy of the oscillating masses depends on the torque load on the shaft and varies automatically with that load. Logically, however, any device having separate input and output shafts which transmit power in such a way that the output torque is different from the input torque is a torque converter, and the term fits the ordinary geared transmission as well as the hydro-kinetic unit with three or more sets of vanes. It would be unfortunate if the term "torque converter" were confined to the hydro-kinetic type, as seems to be the tendency at the present time.

Performance Number

(*Continued from page 278*)

high-pressure air source is used to supercharge the engine.

As in the two motor fuel laboratory knock rating methods—Motor and Research—both aviation methods determine a given fuel's antiknock quality by matching it against blends of two standard reference fuels of known antiknock value. One difference is that, in addition to the reference blends of normal heptane and iso-octane used for motor fuels, reference blends of isooctane plus tetraethyl lead are required for the aviation fuel determinations. These, of course, are used in making antiknock quality ratings above the 100 level.

Together, the octane and performance number scales now provide a continuous yardstick for the easy expression of fuel antiknock quality.

In itself, the octane scale is today, as for the past 20 years, the most widely used means of measuring the knock-limiting value of gasolines for use in spark ignition reciprocating engines, either automotive or aviation. As such, it is an invaluable refinery tool for controlling antiknock quality.

The octane scale was a major milestone in engine-fuel progress. The performance number scale, which for the first time expresses antiknock quality in terms of the engine, is proving to be still another milestone in that direction. —From *Ethyl News*.

AIR BRIEFS

(*Continued from page* 178)

35 years of scientific research into the problem of making aircraft fly faster, higher, farther and safer, someone has discovered that the NACA isn't even legal. According to congressional red tape, this vital agency doesn't even exist. It seems that the National Advisory Committee for Aeronautics, originally merely a committee of 12 men with an appropriation of $5000 "or so much thereof as may be necessary," was created in 1915 as a rider to the Navy appropriations bill (Naval Appropriation Act, Public Law No. 273, 63rd Congress) of that year. The Committee was authorized for a period of five years, which expired in 1920, just 30 years ago. Since that time the NACA has been extra-legal, to which nobody has paid much attention except on two occasions when a point of order has been raised threatening its appropriations and, therefore, its existence. But now the House Armed Services Committee has reported favorably on a bill (HR 5074) that would legalize the NACA as an independent agency of the Government. Frankly, we are happy to see that the U. S. Goverment is finally going to do right by our little Nell. And believe it or not, the Committee only spent $3938.94 of that first five grand, cheerfully turning back $1061.06 to the Treasury!

Structure Revolution

When representatives of the mass-production automotive industries were first called in for consultation on the possibilities of producing aircraft early in World War II, they were more amused than astonished at the bits-and-pieces method of airframe construction, which has characterized all-metal aircraft since the early 'thirties. Experienced automobile production men were incredulous at the millions of tiny rivets, clips, brackets, extrusions, bolts and nuts that went into a single bomber, a far cry from the stamp-it-and-weld-it school in which they had trained. The result was a head-on collision between airframe and automobile men that only war pressure succeeded in cushioning, even to this day. Henry Ford was going to turn out a bomber an hour at Willow Run, which he nearly succeeded in doing in August, 1944, on a two-shift basis—430 bombers in 480 shift-hours; Henry Kaiser was going to roll out Hughes Flying Boats like Liberty ships (the first—and only—Hughes Flying Boat made its first—and only—flight Nov. 2, 1947) and Higgins was going to hammer out Curtiss transports like PT boats, back in 1942.

But now, eight years later, it appears that the automobile men were right, for a mild revolution is now getting under way in the fabrication techniques of aircraft. Dow Chemical Co., Reynolds

(*Turn to page* 294, *please*)

Metals Co., Alcoa, and Lockheed Aircraft Corp. have been hard at work developing integrally-stiffened airframe structural parts. Dow and Reynolds have developed promising techniques for extruding integrally-stiffened skin sheets, Lockheed has developed methods for machining integrally-stiffened skin sheets from plate, and Alcoa is perfecting machinery for rolling tapered and integrally stiffened sheet. Reasons for the revolution are manifold but include the increasing necessity for smooth wing surfaces requiring almost continuous stiffening. More obvious reasons are to reduce production costs, by eliminating the bits and pieces and to increase the efficiency of structural parts. Lockheed reports cost studies showing substantial savings—20 to 30 per cent—through use of integrally stiffened structures. Although material and tooling costs are actually higher, the savings in fabrication and assembly time are so great as to produce the considerable saving noted. Machining from thick plate, extruding, rolling, and press-forging methods are undergoing careful study by the industry and the Air Materiel Command with the twin objectives of lowered costs and increased performance from aircraft fabricated from integrally stiffened elements. So maybe the automotive critics were right after all.

More Cooks for the Brew

The introduction of the turbojet engine was accompanied by repeated references to "only one working part" and the steady increase in the complexity of this so-called simple power plant is familiar to engineers. The ramjet, born with the accolade "no moving parts" also has followed this familiar course by continuing engineering that has fitted recent models with an air-driven turbine which drives a fuel pump to provide a pressurized fuel spray, an automatic fuel control, a generator for an ignition coil, and complex flame holder assemblies, all located within the duct. Another development is the intermittent ramjet, in which the fuel is injected in sequence. During the period the fuel is cut off, the combustion chamber is cooled and its pressure drops. When fuel is injected and fired the result is an explosion-type combustion that develops higher peak pressures than the operating pressure of the continuous-combustion ramjet. The claim is made that higher power and greater efficiency are obtained in this way.

But one power plant most engineers have been certain couldn't be tinkered with was the rocket motor, separate, as it is, from the complex fuel supply system. Now, however, Princeton University has developed a mating of these two simple powerplants, the ramjet and the rocket, into a single complex unit; the ducted rocket or ramrocket. The idea is that since the rocket develops

(*Turn to page 296, please*)

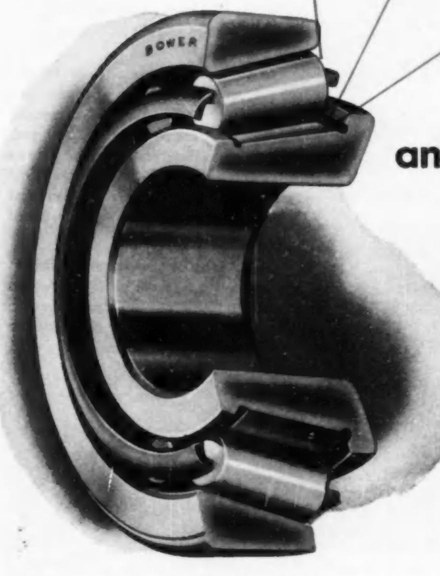
BOWER BEARINGS ARE

SPHER-O-HONED

SPHER—Stands for generated spherical roll-head and flange surfaces designed and manufactured to the exact contour they would otherwise acquire in use. Alignment is improved; wear minimized.

O—Stands for the liberal oil groove which assures a generous supply of lubricant at the critical point where the roll-head operates against the flange, greatly reducing destructive friction.

HONED—Stands for hard, durable races which are honed to micro-inch smoothness. This bonus of precision eliminates the problem of run-out and also prolongs the life of the bearing.



... to improve your product and your plant equipment, too!

Look closely at Bower Spher-O-Honed bearings. Note these basic refinements in design and construction—generated spherical roll-head and flange surfaces; large oil grooves; precise, durable races.

You'll see they can benefit your manufacturing operation in two *distinct ways:*

Installed in your product, Bower bearings contribute positive dependability—wear resistance—long life. They can help make yours a better product, better able to meet competition.

Installed in your plant equipment, Bower bearings guard the precision of your machines—boost efficiency—reduce maintenance problems. They improve your ability to produce a quality product.

Whatever you manufacture, from limousines to bulldozers—and whatever plant equipment you use, from machine tools to lift trucks—it will pay you to standardize on Bower bearings.

BOWER ROLLER BEARING COMPANY, DETROIT 14, MICH.

BOWER

SPHER-O-HONED

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thrust at zero velocity and the ramjet does not develop thrust until it reaches a substantial speed, a combination unit would permit high takeoff thrust as well as high-speed thrust. The rocket jet also induces a high air flow through the ramjet for takeoff and provides a high-temperature working fluid for the ramjet. Bill Stout's classic edict to "simplicate and add more lightness" seems to have lost out in its unequal struggle with jet engineering.

Industry Still Kicking

You'll have to hand it to the personal aircraft industry for its spirit, which refuses to give up. Fred E. Weick, designer of the famed Ercoupe and now director of the personal aircraft research center at Texas A&M College, is developing a new agriculture spray plane as a joint industry-CAA project. To date he has received, as donations to the cause, a Continental E-185 engine, one Aeromatic and one McCauley propeller, a Cessna spring-steel landing gear, a 40-G Patushin adjustable seat and an American Seating Co shoulder harness. Other gifts are on the way and it's beginning to appear that all Fred will have to do is assemble everything and put a frame around it. The remarkable expansion of aerial spraying has created virtually a separate new field for the personal aircraft industry, and its members aren't overlooking any good bets, which Fred Weick's new design certainly is.

Machine Tool Builders Urge Program

(*Continued from page 213*)

In general, the purpose of the special meeting was two-fold—to discuss the formation of the advertising council, and to find means for increasing the volume of machine tool business by selling the replacement idea to industry as a good investment on the part of manufacturing concerns.

L. W. Scott Alter, President, The American Tool Works Co., and Chairman of the Public Relations Committee, urged that means must be found to siphon off the old and obsolete tools now found in plants all over the country, as a measure of industrial preparedness. He recommended greater publicity for replacement formulas based upon sound experience as a means of demonstrating the savings possible with new equipment as compared with the limited output and quality of old and obsolete machinery.

It also was emphasized that machine tool advertising must be made more effective to meet the competition of used machinery dealers. Donald M. Pattison, vice-president in charge of sales, Warner & Swasey Co., disclosed that in 1949 used machinery dealers sold 50 per cent more turret lathes than turret lathe builders.

Let's talk about

- ★ SPECIAL COLD FORGED PARTS
- ★ STANDARD CAP SCREWS
- ★ HARDENED AND PRECISION GROUND PARTS
- ★ SHEET METAL DIES FROM THE LARGEST TO THE SMALLEST
- ★ JIGS ★ FIXTURES
- ★ STEAM-HEATED PLASTIC MOLDS
- ★ SPECIAL PRODUCTION TOOLS
- ★ R-B INTERCHANGEABLE PUNCHES AND DIES
- ★ DIE MAKERS' SUPPLIES

AT BOOTH 665
TOOL ENGINEERS'
(Cost-Cutting)
INDUSTRIAL EXPOSITION

ALLIED WITH MASS PRODUCTION

At the A.S.T.E. Show in the Philadelphia Convention Hall in April, you will have the opportunity to learn first-hand the many ways in which Allied's products and services can contribute to lower costs and greater production efficiency in your plant. As a reminder to visit our booth, it is a suggestion that you tear out this advertisement and drop it in the brief-case that you will carry to Philadelphia.

If you are unable to attend the Exposition, we will be glad to mail you full information on any or all of the products listed above.

ALLIED PRODUCTS CORPORATION

DEPARTMENT 51

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NATIONAL OIL SEAL LOGBOOK

USE OF NEW UNITARY OIL SEALS INSTEAD OF EXPENSIVE FACE TYPES

Many tough applications where face type seals have been thought necessary are now utilizing unitary oil seals at substantial savings in cost. Farm implements, tractors, track tread units and other machinery which operate in heavy dirt under adverse conditions are typical of these applications.

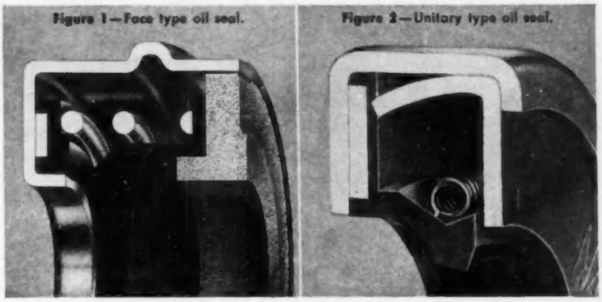

Figure 1—Face type oil seal. Figure 2—Unitary type oil seal.

Note mechanical complexity of face type seal as compared to unitary type oil seal.

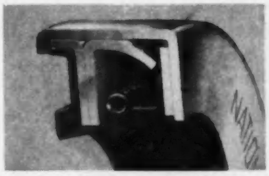

Figure 3—National Series 330,000 Syntech* dual wipe oil seal.

Figure 4—National convoluted flex type oil seal permits extreme shaft misalignment.

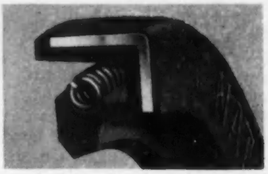

Figure 5—National Series 350,000 rubber-covered oil seal requires less critical bore.

The advent of new sealing member of synthetic compounds and development of new treatments for leather, coupled with a considerable advance in mechanical design of the oil seal itself, have made practical their use in some of the most rugged and exacting applications. Savings are effected in the cost of the sealing unit and in the cost of manufacturing of the equipment itself. In addition, servicing of the equipment is greatly simplified.

The sectional drawings (Figs. 1 & 2) show the complexity of the face type seal as compared to the unitary type, which accounts for the low cost of the one versus the other. It is apparent that a unitary type seal can be more easily incorporated mechanically with resultant savings in the manufacture of the equipment.

Many new unitary oil seal designs have been developed which solve difficult problems. A few of these are shown (Figs. 3, 4 & 5). The dual wipe seal shown (Fig. 3), having Syntech* sealing members, was designed for a farm implement application which formerly utilized an expensive face type seal. This particular seal provides vastly improved performance in this type of equipment.

National Oil Seal engineers recommend face type oil seals only when thorough research proves them absolutely necessary and practical.

No matter what your problems—whether requiring face types, special sealing member compounds or adaptations of stock designs—National Oil Seal engineers will gladly help you. A quarter century of experience is your assurance of dependable assistance.

NATIONAL
OIL AND FLUID SEALS

NATIONAL MOTOR BEARING CO., INC.

General Offices: Redwood City, Calif.
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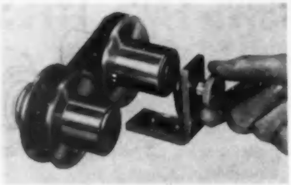
NEW PRODUCTS

For additional information please use coupon on page 180

(*Continued from page 262*)



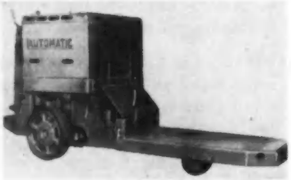
Speed Selector variable speed combination sheaves

bined with smaller single groove sizes.

The spring-loaded variable-pitch driving sheave is usually mounted on the motor shaft, and the controllable pitch sheave, of either the same or a different diam, is mounted on the driven shaft. The control knob and bracket assembly is then secured to the machine base, and the standard V-belt snapped into place to complete the drive.

As the faces of the controllable sheave are forced closer together, the pitch diam at which the belt rides in its V-groove is increased. This pulls the belt deeper into the groove of the spring-loaded sheave, spreading its faces apart which produces a smaller driving pitch diam. Thus the pitch diam of one sheave is decreased as the other pitch diam is increased. This multiplies the speed variation of one sheave by the speed variation of the other.

K-101—Hydraulic Lift Platform Truck



Hydraulic lift has been introduced in its 6,000-lb low-lift platform truck by the Automatic Transportation Co., Chicago, Ill. High pressure hydraulics applied to the company's Skylift and Transporter lines provides full control in lifting and lowering,—of special importance in foundry work where fragile items such as green cores are handled. Replacing chains and gearing with the new hydraulic pump and ram now results in fewer parts in this new model (LN-3). Relief valves in the hydraulic circuit are designed for positive overload protection.

The first metal float type carburetor was designed and built by Holley;
. . . and Holley was first to combine the modern carburetor and precision governor.
HOLLEY
Carburetor Co.
DETROIT 4
For Half a Century—
Original Equipment Manufacturers for the Automotive Industry

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(Continued from page 174)

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The WHITE Motor Co., Cleveland 1, Ohio.
WILLYS-OVERLAND Motors, Inc., Toledo 1, Ohio.
WISCONSIN Motor Corp., Milwaukee 14, Wisc.

AUTOMOTIVE DIESEL ENGINES

For details of their products see pages 152-157.

ATLAS IMPERIAL Diesel Engine Co., Oakland 6, Calif.
The BUDA Company, Harvey, Ill.
CATERPILLAR Tractor Co., Peoria 8, Ill.
CLIMAX Engineering Co., Clinton, Iowa.
CONTINENTAL Motors Corp., Muskegon, Mich.
CUMMINS Engine Co., Inc., Columbus, Ind.
DETROIT DIESEL Engine Div., General Motors Corp., Detroit 28, Mich.
FAIRBANKS, MORSE & Co., Chicago 5, Ill.
GRAY MARINE Motor Co., Detroit 7, Mich.
HALLETT Manufacturing Co., Inglewood, Calif.
HARNISCHFEGER Corp., Diesel Div., Port Washington, Wis.
HERCULES Motors Corp., Canton 2, Ohio.
HILL Diesel Engine Corp., Lansing 3, Mich.
INTERNATIONAL HARVESTER Co., Chicago 1, Ill.
KERMATH Manufacturing Co., Detroit 8, Mich.
MACK - INTERNATIONAL Motor Truck Corp., New York 1, N. Y.
MURPHY Diesel Co., Milwaukee 14, Wisc.
RED WING Motor Co., Red Wing, Minn.
SCRIPPS Motor Co., Detroit 8, Mich.
R. H. SHEPPARD CO., Inc., Hanover, Pa.
STERLING Engine Co., Buffalo 13, N. Y.
WAUKESHA Motor Co., Waukesha, Wis.

AIRCRAFT GAS TURBINE ENGINES

For details of their products see pages 156 and 157.

UNITED STATES

ALLISON Div., General Motors Corp., Indianapolis 6, Ind.

(Turn to page 304, please)

Directory of Manufacturers

(*Continued from page 302*)

GENERAL ELECTRIC CO., Aircraft Gas Turbine Div., West Lynn, Mass.

PRATT & WHITNEY Aircraft Div. of United Aircraft Corp., East Hartford 8, Conn.

WESTINGHOUSE ELECTRIC Corp., Aviation Gas Turbine Div., Lester, Philadelphia 13, Pa.

WRIGHT Aeronautical Corp., Wood-Ridge, New Jersey.

BRITISH

ARMSTRONG SIDDELEY Motors Ltd., Coventry, Eng.

BRISTOL Aeroplane Co., Ltd., Filton House, Bristol, Eng.

De HAVILLAND Engine Co., Ltd., Edgware, Middlesex, Eng.

D. NAPIER & SON, Ltd., Acton, London W.3, Eng.

ROLLS-ROYCE, Ltd., Derby, England.

AMERICAN AIRCRAFT ENGINES

For details of their products see pages 158 and 159.

AIRCOOLED Motors, Inc. (Franklin), Syracuse 8, N. Y.

CAMERON Aero Engine Corp., Reading, Penna.

CONTINENTAL MOTORS Corp., Aircraft Engine Div., Muskegon, Mich.

GLADDEN Products Corp. (Kinner), Glendale 4, Calif.

JACOBS Aircraft Engine Co., Pottstown, Penna.

LYCOMING-SPENCER Div., Avco Manufacturing Corp., Williamsport 38, Penna.

PRATT & WHITNEY Aircraft, Div. United Aircraft Corp., East Hartford 8, Conn.

RANGER Aircraft Engines, Div. Fairchild Engine and Airplane Corp., Farmingdale, N. Y.

The WARNER Aircraft Corp., Detroit 5, Mich.

WRIGHT Aeronautical Corp., Div. Curtiss-Wright Corp., Wood-Ridge, N. J.

SMALL GASOLINE ENGINES

For details of their products see pages 160 and 161.

BRIGGS & STRATTON Corp., Milwaukee 1, Wisc.

CONTINENTAL Motors Corp., Air Cooled Engine Div., Detroit, Mich.

CUSHMAN Motor Works, Inc., Lincoln 1, Neb.

ERIE Engine & Mfg. Co., Erie, Penna.

GLADDEN Products Corp., Glendale 4, Calif.

HOMELITE Corp., Port Chester, N. Y.

INTERNATIONAL HARVESTER CO., Chicago 1, Ill.

JACOBS Aircraft Engine Co., Pottstown, Pa.

JACOBSEN Manufacturing Co., Racine, Wisc.

KERMATH Manufacturing Co., Detroit 8, Mich.

The LAUSON Company, New Holstein, Wisc.

LE ROI COMPANY, Milwaukee 14, Wisc.

McCULLOCH Motors Corp., Los Angeles 45, Calif.

NOVO Engine Co., Lansing 5, Mich.

D. W. ONAN & Sons Inc., Minneapolis 5, Minn.

REO Motors, Inc., Lawn Mower Div., Lansing 20, Mich.

SALSBURY Motors Div., Wayne Mfg. Co., Pomona, Calif.

UEBELHOER Brothers, Inc. (Ultimotor), Buffalo 15, N. Y.

UNITED Engine Co., Lansing, Mich.

UNIVERSAL Motor Co., Oshkosh, Wis.

WISCONSIN Motor Corp., Milwaukee 14, Wisc.

AMERICAN OUTBOARD MOTORS

For details of their products see pages 162 and 163.

ATLAS Supply Co. (Royal), Newark, N. J.

(*Turn to page 306, please*)

To help you get rolling on Torque Converters . . .

Is torque converter production slowing your assembly lines—or complicating your 1950 plans? Then this news is important to you. Alcoa has set up special foundry facilities in Detroit for the mass production of cast aluminum torque converter parts. We are ready now to help you capitalize fully the advantages of Alcoa Castings.

Their smoothness permits top efficiency. They have the strength to withstand high centrifugal stresses. They resist corrosion. Their fast heat transfer prevents hot spots. They machine rapidly.

A discussion with our engineers may save you both time and money. Contact your nearby Alcoa Sales Office. Or write ALUMINUM COMPANY OF AMERICA, 1841C Gulf Building, Pittsburgh 19, Pennsylvania.

ALCOA FIRST IN ALUMINUM

ALCOA ALUMINUM ®

INGOT • SHEET & PLATE • SHAPES, ROLLED & EXTRUDED • WIRE • ROD • BAR • TUBING • PIPE • SAND, DIE & PERMANENT MOLD CASTINGS • FORGINGS • IMPACT EXTRUSIONS
ELECTRICAL CONDUCTORS • SCREW MACHINE PRODUCTS • FABRICATED PRODUCTS • FASTENERS • FOIL • ALUMINUM PIGMENTS • MAGNESIUM PRODUCTS

Directory of Manufacturers

(*Continued from page 304*)

CHAMPION Motors Co., Minneapolis 13, Minn.
CHRIS-CRAFT Corp., Grand Rapids, Mich.
CORSAIR Outboard Motor Co., Minneapolis 13, Minn.
EVINRUDE Motors (Evinrude), Milwaukee 9, Wisc.
FIRESTONE Tire & Rubber Co., Akron 17, Ohio.
GAMBLE - SKOGMO, Inc. (Hiawatha), Minneapolis, Minn.
GOODYEAR Tire & Rubber Co. (Sea Bee), Akron, Ohio.
JOHNSON Motors, Waukegan, Ill.
MARTIN Motors, Div. of National Pressure Cooker Co., Eau Claire, Wisc.
METAL PRODUCTS Corp. (Flambeau), Milwaukee 12, Wisc.
MONTGOMERY WARD (Sea King), Chicago, Ill.
MUNCIE Gear Works, Inc. (Neptune), Muncie, Ind.
SCOTT-ATWATER Mfg. Co., Minneapolis 13, Minn.
SEARS, ROEBUCK & Co. (Elgin), Chicago, Ill.
SPIEGEL, Inc., Chicago, Ill.
WEST BEND Aluminum Co. (Elgin), West Bend, Wisc.

FOREIGN PASSENGER CARS

For details of their products see pages 164 and 165.

BRITISH

A. F. N. LTD. (Bristol, Frazer-Nash), Isleworth, Middlesex, England.
ALLARD Motor Co., Ltd., Clapham, London, S.W.4, England.
ALVIS Ltd., Coventry, England.
ARMSTRONG SIDDELEY Motors, Ltd., Coventry, England.
ASTON MARTIN Ltd., Feltham, Middlesex, England.
AUSTIN Motor Co., Ltd., Longbridge, Birmingham, England.
CITROEN Cars Ltd., Slough, Bucks, England.
DAIMLER Co. Ltd. (Daimler, Lanchester), Coventry, England.
FORD Motor Company, Ltd., Dagenham, Essex, England.
H.R.G. Engineering Co. Ltd., Tolworth, Surrey, England.
HUMBER (Limited (Rootes Group) (Humber, Hillman, Sunbeam-Talbot), Coventry, England.
INVICTA Car Development Co. (London) Ltd., Virginia Water, Surrey, England.
JAGUAR Cars Ltd., Coventry, England.
JENSEN Motors Ltd., West Bromwich, Birmingham, England.
JOWETT Cars Limited, London, W.1, England.
LAGONDA, Ltd., Feltham, Middlesex, England.
LEA-FRANCIS Cars, Ltd., Coventry, England.
MORGAN Motor Co., Ltd., Malvern Link, Worcestershire, England.
M.G. Car Co. Ltd., Nuffield Exports Ltd., Abingdon-on-Thames, England.
MORRIS Motors, Ltd., Nuffield Exports Ltd., Cowley, Oxford, England.
RILEY (Coventry), Ltd., Nuffield Exports Ltd., Foleshill, Coventry, England.
ROLLS-ROYCE, Ltd. (Rolls-Royce, Bentley), London W.1, England.
ROVER Company Ltd., Solihull, Birmingham, England.
SINGER Motors, Ltd., Small Heath, Birmingham, England.
STANDARD Motor Co., Ltd. (Standard, Triumph), Coventry, England.
VAUXHILL Motors Ltd., Luton, Beds, England.
WOLSELEY Motors, Ltd., Ward End, Birmingham, England

CZECHOSLOVAKIAN

TATRA, Koprivnice, CSR.

FRENCH

BERNARDET Freres, Chatillon-Sous-Bagneux (Seine), France

(*Turn to page 308, please*)

Extra Dividends with CLEVELANDS

From experience, production managers know that Cleveland Presses give years and years of profitable trouble-free operation. You call this kind of a press a work horse. Above at the Bettcher Manufacturing Company of Cleveland, Ohio, you see a Cleveland 2-84-250 Press making the first form on two automotive body sections. Another Cleveland has already done the blanking while the third Cleveland is making the final form in this press production line.

In emergency cases these Clevelands have been called on to handle forming jobs requiring more than rated capacities. Though this is not the usual practice at the Bettcher plant, it has enabled them to handle many jobs that otherwise would have been impossible. The sound engineering and tested design that stands behind every Cleveland Press has paid off again.

Reserve capacity is only one of the *extra dividends* you can expect from your investment in a Cleveland Press. "Besides its extreme ruggedness you can also count on continuous accuracy and minimum maintenance with Clevelands," says Mr. Clarence H. Lange, plant superintendent at Bettcher.

Be sure to investigate the advantages offered by the complete line of Cleveland Presses. Standard presses can be furnished in a wide range of sizes and capacities in ten different types. A special Cleveland Press can be designed for your exact requirements. A-2097

THE CLEVELAND PUNCH & SHEAR WORKS CO.
U.S.A.

PUNCHING TOOLS & DIES

FABRICATING TOOLS

OFFICES AT:
NEW YORK....CHICAGO
DETROIT....PHILADELPHIA
PITTSBURGH

Established 1880

POWER PRESSES

CLEVELAND 14, OHIO

Directory of Manufacturers

(Continued from page 306)

BOITEL, Paris 18, France.
BUGATTI, Paris, France.
CITROEN, Paris, France.
CLAVEAU, Paris 8, France.
DELAGE, Paris, France.
DELAHAYE, Paris, France.
FORD, Poissy, S. & O., France.
GREGOIRE, J. A., Asnieres, Seine, France.
HOTCHKISS, St. Denis, Seine, France.
JULIEN, Paris, France.
MATHIS, France.
PANHARD & LEVASSOR, Paris, France.
PEUGEOT, Paris, France.
RENAULT (Regie), Billancourt, Seine, France.
ROSENGART, Paris 17, France.
ROVIN, Robert de, Paris, France.
SIMCA (Fiat), Nanterre, Seine, France.
TALBOT - DARRACQ, Suresnes, Seine, France.
WIMILLE, J. P., Paris, France.

GERMAN

ADAM OPEL A.G., Russelsheim/Main, Gr.
AKTIENGESELLSCHAFT Awtowelo, (BMW) Eisenach, Thuringen, Gr.
DAIMLER - BENZ Aktien - Gesellschaft, (Mercedes-Benz), Stuttgart, Unterturkheim, Gr
FORD-WERKE AG, Cologne, Gr.
VERITAS Company, French Zone of Gr.
VOLKSWAGENWERK GmbH, Wolfsburg, Gr.

ITALIAN

ALFA ROMEO S. p. A., Milano, Italy.
CISITALIA SOC. P. AZIONI, Torino, Italy.
FERRARI Automobili, Modena, Italy.
FIAT S.p.a., Torino, Italy.
ISOTTA FRASCHINI, S. A., Milano, Italy.
LANCIA & C. S. A., Torino, Italy.
Officine Alfieri MASERATI, Modena, Italy.

BRITISH COMMERCIAL AND PRIVATE AIRCRAFT

For details of their products see pages 166 and 167.

AIRSPEED, Ltd., Christchurch, Hampshire, Eng.
ARMSTRONG WHITWORTH Aircraft, Sir W. G., Ltd., Baginton, nr. Coventry, Eng.
AUSTER Aircraft, Ltd., Rearsby, Leicester, Eng.
The BRISTOL AEROPLANE Co., Ltd., Filton House, Bristol, Eng.
The CHRISLEA Aircraft Co., Ltd., Clyst Honiton, Devon, Eng.
The DE HAVILLAND Aircraft Co., Ltd., Hatfield, Hertfordshire, Eng.
HANDLEY PAGE, Ltd., Cricklewood, London, N.W.2, Eng.
PERCIVAL Aircraft Ltd., Bedfordshire, Eng.
SAUNDERS-ROE, Ltd., Osborne, East Cowes, Isle of Wight, Eng.
SCOTTISH AVIATION, Ltd., Prestwick Airport, Ayrshire, Eng.
SHORT BROTHERS & Harland Ltd., Queens Island, Belfast, Eng.
VICKERS - ARMSTRONGS, Ltd., Weybridge, Surrey, Eng.

FRENCH AIRCRAFT ENGINES

For details of their products see pages 166 and 167.

ARSENAL de l'Aeronautique, Bagneux, Seine, France.
HISPANO-SUIZA, Bois-Colombes, Seine, France.
SOCIETE E.E.C. Mathis, Paris, France.
NATIONAL Aero Engine Factory, Paris, France.
Societe POTEZ, Paris, France.

FOREIGN DIESEL ENGINES

BRITISH

For details of their products see pages 168-171.

A.E.C. Limited, Southall, Middlesex, England.
ASSOCIATED British Oil Engines Ltd. (McLaren, Mirrlees, Peter), London, S. W. 1, England.
BRISTOL Tramways & Carriage Co., Ltd., Brislington, Bristol 4, England.
COVENTRY Diesel Engines Ltd., Coventry, England.
COVENTRY Victor Motor Co., Ltd., Coventry, Eng.
CROSSLEY Motors Ltd., Stockport, Cheshire, England.
DENNIS Bros. Ltd., Guildford, Surrey, England.
FODENS Limited, Sandbach, Cheshire, England.
L. GARDNER & Sons, Ltd., Patricroft, Manchester, England.
LEYLAND Motors Ltd., Leyland, Lancashire, England.
HENRY MEADOWS Ltd., Wolverhampton, England.
MORRIS Motors Ltd., Nuffield Exports Ltd., Cowley, Oxford, England.
F. PERKINS Limited, Peterborough, England.
John I. THORNYCROFT & Co., Ltd., London, W.S.1, England.
TRANSPORT Vehicles (Daimler) Ltd., Coventry, England.

CZECHOSLOVAKIAN

TATRA, Koprivnice, CSR.

FRENCH

Automobiles BERLIET, Lyon, Rhone, France.
BERNARD Moteurs, Paris, France.
CITROEN, Paris, France.
HISPANO-SUIZA, Bois-Colombes, Seine, France.
IRAT & Co., Levallois-Paerret, Seine, France.
LATIL, Suresnes, Seine, France.
MANUFACTURE D'ARMES de Paris, (MAP), St. Denis, France.
PANHARD & LEVASSOR, Paris, France.
RENAULT, Billancourt, Seine, France.
ROCHET SCHNEIDER, Levallois-Perret, Seine, France.
S.O.M.U.A., Saint Ouen, Seine, France.
UNIC, Puteaux, Seine, France.
WILLEME, Nanterre, Seine, France.

GERMAN

BUSSING-NAG, Braunschweig, Gr.
DAIMLER-BENZ, Gaggenau, Baden, Gr.
KLOCKNER-HUMBOLDT-DEUTZ, (Deutz), Deutz, Gr.
MASCHINENFABRIK Augsburg-Nurnberg, (M.A.N.), Nurnberg, Gr.

ITALIAN

LANCIA, Torino, Italy.
O.M., Brescia, Italy.

SWISS

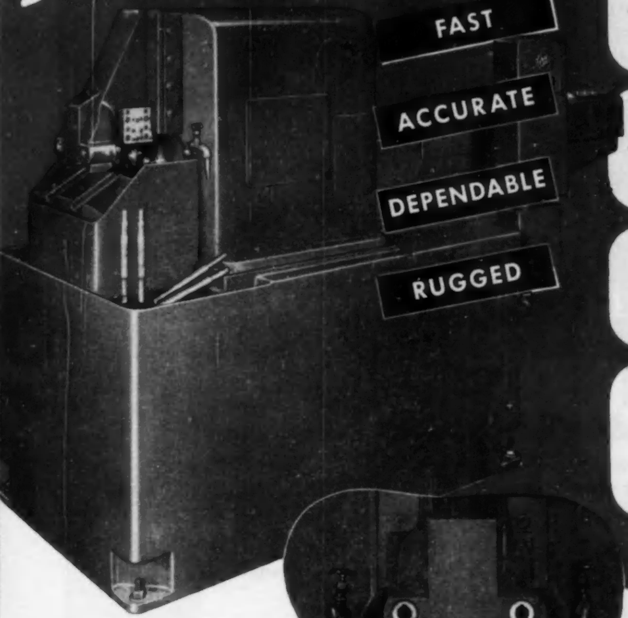
SO. ANONYME ADOLPHE SAURER, Arbon, Switzerland.

BRITISH AIRCRAFT ENGINES

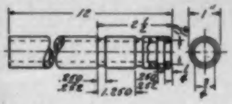
For details of their products see page 172.

ALVIS, Limited, Coventry, England.
ARMSTRONG SIDDELEY Motors, Ltd., Coventry, England.
BLACKBURN and General Aircraft, Ltd., Brough, East Yorks, England.
BRISTOL Aeroplane Co., Ltd., Filton House, Bristol, England.
DE HAVILLAND Engine Co., Ltd., Edgware, Middlesex, England.
ROLLS-ROYCE Ltd., Derby, England.

The *New* Motch & Merryweather *Automatic*

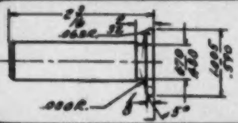


STUDY THESE TYPICAL JOBS

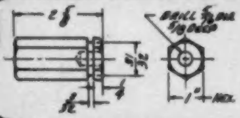


Operation: Form grooves, chamfer O. D., face and form internal groove.
Material: Seamless tubing—mild steel ⅛" wall.
Production: 1100 pcs/hr. @ 100% eff.

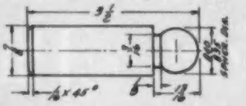
Operation: Form snap ring grooves, grease groove, chamfer and drill.
Material: AISI-1015.
Production: 720 pcs/hr. @ 100% eff.



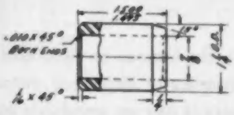
Operation: Face head, form back of head and neck.
Material: SAE 5120.
Production: 720 pcs/hr. @ 100% eff.



Operation: Form chamfer, groove, drill and cut off.
Material: Aluminum F.M.
Production: 680 pcs/hr. @ 100% eff.

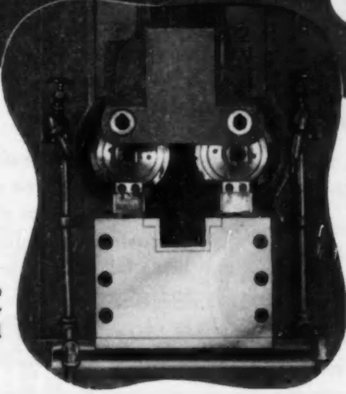


Operation: Form diameter, groove, chamfer and cut off.
Material: Aluminum F.M.
Production: 510 pcs/hr. @ 100% eff.



Operation: Form chamfer both ends O. D. Break edges I. D. and cut off.
Material: Seamless tubing—SAE 1020.
Production: 600 pcs/hr. @ 100 eff.

The new M. & M. Automatic is available as a bar-feed or hopper-loaded machine.



Illustrated at right are spindles and heavy duty forming slides with guard removed.

The drawings above can only hint at the possibilities of the new, proven Motch & Merryweather Automatic. Study them closely, compare with your own requirements, and then

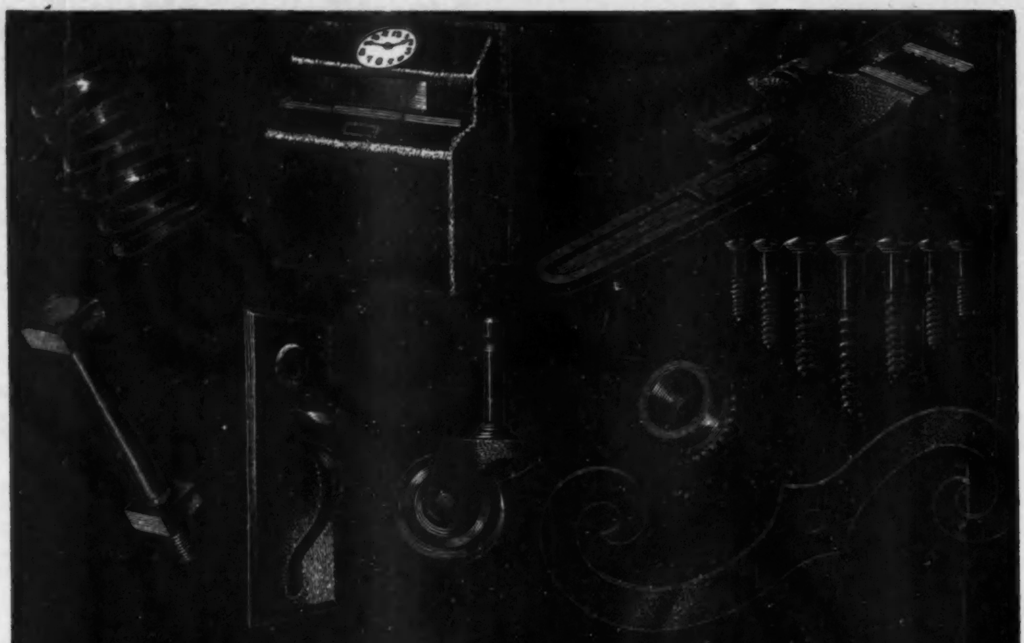
WRITE US FOR FULL INFORMATION,
describing your needs.

Manufactured by

THE MOTCH & MERRYWEATHER MACHINERY COMPANY • 715 PENTON BUILDING, CLEVELAND 13, OHIO

Builders of Circular Sawing Equipment, Production Milling, Automatic and Special Machines

PRODUCTION-WITH-ACCURACY MACHINES AND EQUIPMENT



Durable, matte black finish on iron and steel resists rust.... Parco Compound

This is the famous Parker rust inhibitor, constantly improved during the 30 years it has set standards for protection of iron and steel.

Parco compound adds greatly to the appearance of the treated parts. Combined with stains or oils, an attractive matte black finish is produced.

This treatment, still at its pre-war low cost, is more efficient than ever. Processing time has been cut, operation is simplicity itself, and results are uniformly excellent. The only limitation on size of parts treated is the size of the processing tank. Parco Compound can be used on complicated shapes, and on parts with close tolerances, too, since there is no appreciable change in dimensions.

Parco Compound may well be the answer to protect your iron and steel production from rust and corrosion. A request will bring full information. Write today.

PROTECTED BY Parco Compound QUALITY RUST RESISTANT

Bonderite, Parco, Parco Lubrite—Reg. U.S. Pat. Off.

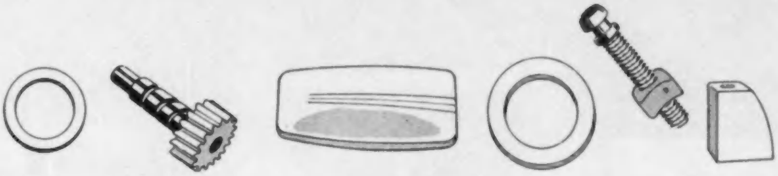
PARKER

PARKER RUST PROOF COMPANY
2178 East Milwaukee Ave.
Detroit 11, Michigan

BONDERITE—Corrosion Resistant Paint Base • PARCO COMPOUND—Rust Resistant • PARCO LUBRITE—Wear Resistant for Friction Surfaces

NYLON PLASTIC

performance for automotive parts



2 PERFORMANCE

Parts made of nylon plastic mean long, trouble-free service because of these excellent properties:

TOUGHNESS—Nylon has a combination of elasticity and elongation that, in many cases, permits it to absorb shock without being chipped, dented or worn excessively.

ABRASION-RESISTANCE — Here nylon is superior to other plastics and, under certain conditions, even to metals.

HEAT-RESISTANCE—Nylon is far superior to other thermoplastics, compares favorably with thermosetting plastics.

FATIGUE-RESISTANCE—In standard flexural fatigue tests run at high speeds, nylon shows very low loss of flexural strength even after millions of cycles.

RESISTANCE TO PERMANENT DISTORTION — Nylon does yield under stress but has an inherent tendency to resume its original shape.

CHEMICAL-RESISTANCE—Nylon is unaffected by alkalies, dilute mineral acids, and most organic solvents, including gasoline and oil.

GOOD BEARING CHARACTERISTICS — Nylon has a very low coefficient of friction and certain unique behavior characteristics which make it a useful bearing material for many applications.

QUIETNESS — The resiliency of nylon permits close mating of parts without chatter. Nylon also damps resonant torsional vibration.

• • • • •

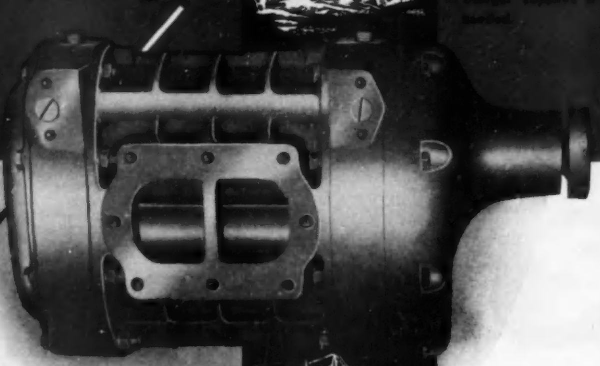
FOR MORE INFORMATION on nylon and other Du Pont plastics for the automotive industry, write today for free literature. E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Department, Plastic Sales Offices: General Motors Bldg., Detroit 2, Mich.; 350 Fifth Avenue, New York 1, New York; 7 S. Dearborn St., Chicago 3, Ill.; 845 E. 60th St., Los Angeles 1, Calif.

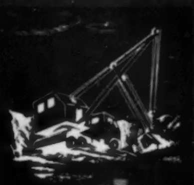
DU PONT
REG. U.S. PAT. OFF.
PLASTICS

Better Things for Better Living
... through Chemistry

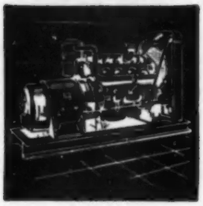
UP TO 45% MORE HORSEPOWER

. . . from the same engine





For work boats, industrial locomotives, etc., superchargers save space and fuel.



For Diesel generating plants, B-W Superchargers provide maximum performance and flexibility.

. . . with a B-W Supercharger

When you need more power, without additional weight, and installation space is limited . . . when altitudes are high and engine power diminishes . . . when the going is uphill, and tough . . . those are the times when you need the help of a B-W Supercharger.

Without an appreciable increase in engine space requirements, a B-W Supercharger greatly increases engine performance and flexibility because it delivers more air to the cylinders than the pumping action of the pistons would normally draw in. It's that simple . . . yet this simple principle means up to 45% MORE power from the engine! And that means smaller original investment, savings in fuel.

Over 10 years of trouble-free performance in the field have proved the leadership of B-W Superchargers. They are designed and built in both sleeve bearing and antifriction bearing type . . . the sleeve bearing type being lubricated from the engine.

For complete information . . . and for the full story of what B-W Superchargers can do for your Diesel or gasoline engines, write today.

engineering Pesco production

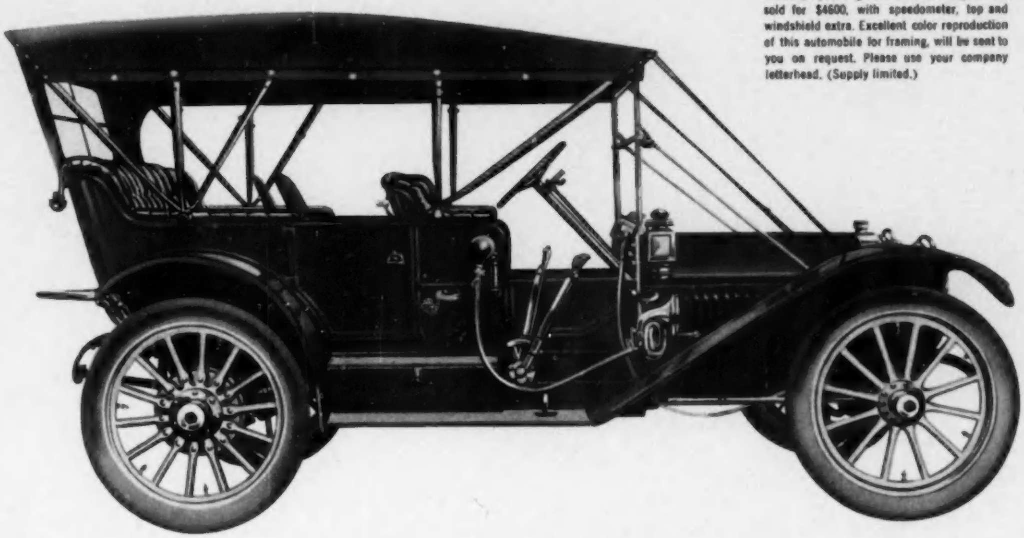
PESCO PRODUCTS DIVISION

BORG-WARNER CORPORATION

24700 NORTH MILES ROAD BEDFORD, OHIO

THIS IS THE FIRST of a series of old-car paintings. Many will bear familiar names. Others, long forgotten or little known, will return to life in the rich fullness of color.

This 1910 six-cylinder, 60 h. p. Oldsmobile Limited, sparkling in its bold fire-engine red, sold for $4600, with speedometer, top and windshield extra. Excellent color reproduction of this automobile for framing, will be sent to you on request. Please use your company letterhead. (Supply limited.)



Bright as a Fire-engine and Burns up the Road

YOU didn't have to be self-conscious about choosing a bright car color in 1910, for if you bought one of the early touring cars, obviously you were the fearless pioneer type. You were a real man who liked a man's color . . . which could have meant any color, so long as it was RED! Color experts might well have observed how fire-engine red both complemented your dashing personality and stimulated your imagination . . . to buy!

We Americans have always loved color, but today are finding a fresh, new appeal in this exciting world of warmth and beauty. There is a vigorous reawakening to color; and car, truck and farm equipment manufacturers, alive to this wholesome trend, are making good use of more alluring colors; are careful to select highest quality finishes that retain their lustrous beauty through years of service in all kinds of weather.

RINSHED-MASON COMPANY 5935 MILFORD AVENUE DETROIT 10, MICHIGAN

R-M

America's leading manufacturer of fine lacquers, enamels and undercoats for automobiles, trucks, farm equipment, appliances, and numerous other products of industry. We invite your inquiry.

REG. U.S. PAT. OFF.

What is the standard for *Standard*

Frankly, our standards for quality and precision are plagiarized! For nearly two decades as dependable supplier to the makers of the world's finest automobiles, The Standard Products Company has always delivered parts that exactly conformed to the manufacturer's specification for fineness, durability, dimensions . . . and economical cost.

The standard for our products is set for us in each instance. Our ability to produce just what you want and deliver just when you want it is assured by close engineering cooperation with you, plus practical experience and skilled production.

There is a place in your improved product for **PRODUCTS BY STANDARD:** Door locks and latching devices . . . rubber parts and insulation . . . thermo-plastic trim and accessories . . . and famous **STEECHAN** glass-run window channel and weatherstrip.

THE MARK OF A SP SUPERIOR PRODUCT

The Standard Products Co.

EXECUTIVE OFFICES — 2130 W. 110th ST. CLEVELAND 2, OHIO

SALES OFFICES — 316 FISHER BLDG., DETROIT 2, MICH.

Plants Located in Port Clinton, Ohio; Cleveland, Ohio; St. Clair, Mich.; Gaylord, Mich.; Long Beach, Calif.; Windsor, Ontario

Seattle, Wash.—Kenworth Motor Truck Corporation build four models of modern, lightweight bus bodies using Mayari R cold-formed structural shapes. All four are designed so that 90 pct of their framing can be made with only five different shapes.

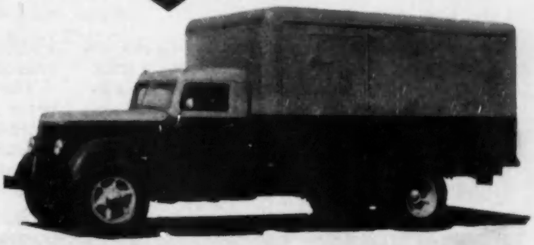
ACROSS the NATION

VEHICLE BUILDERS ARE CUTTING DEADWEIGHT WITH MAYARI R

Perry, N. Y.—Koustine Company built this 6000-gal frameless truck tank from Mayari R. The shell, baffles and heads are welded into a high-strength unit capable of carrying full loads without ordinary structural members.

Rock Hill, S. C.—Rock Hill Body Company build commercial truck bodies like the beverage truck body shown at left. They use Mayari R because it allows substantial weight reduction without sacrificing strength. They have also found that paint lasts longer on this grade of steel than on ordinary carbon steel.

Detroit, Mich.—Oltman-O'Neill Company build lightweight truck bodies from Parish Universal Body Sections of Mayari R steel. These strong yet light-gage members have high resistance to impact, fatigue and atmospheric corrosion, thanks to the superior properties of Mayari R.



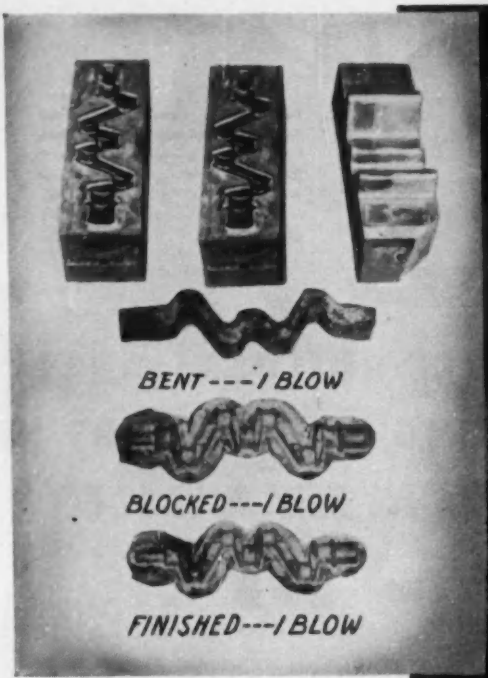
Mayari R is a versatile grade of low-alloy, high-strength steel that is being used to advantage by truck and bus body builders in all sections of the nation. For further information on its uses write for a copy of the new Mayari R catalog.

BETHLEHEM STEEL

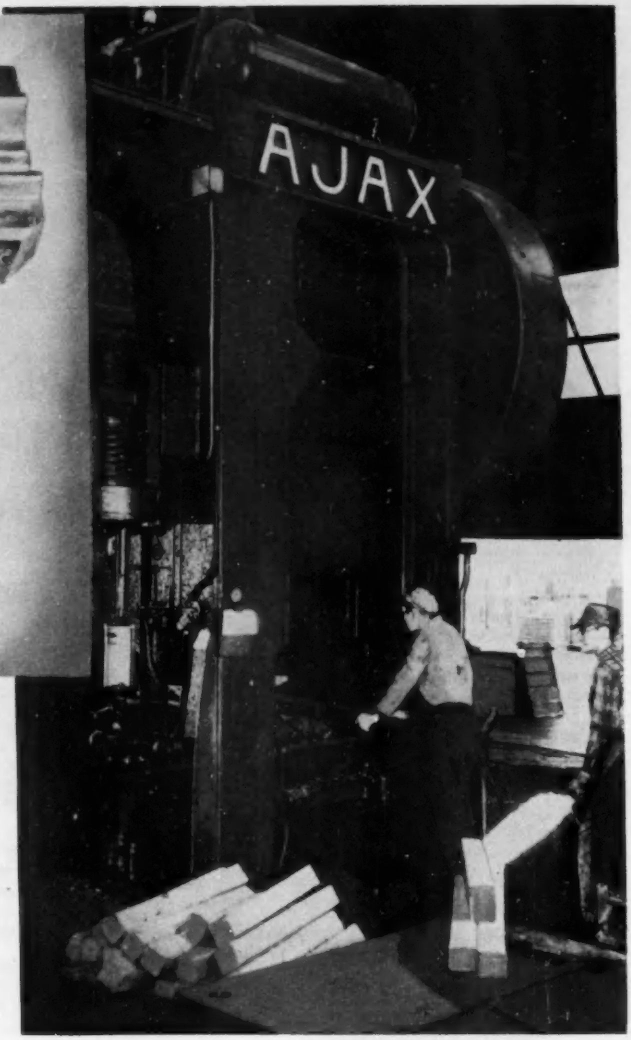
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

Mayari R *makes it lighter... stronger... longer lasting*



Dies and Forging Operation for Forging Tractor Crankshaft.



Press Forging Tractor Crankshaft at International Harvester Company, Louisville, Kentucky, Works.

INTERNATIONAL HARVESTER COMPANY

PRESS FORGES TRACTOR CRANKSHAFTS

In the Louisville, Kentucky, works of International Harvester Company, tractor crankshafts as well as axles, steering knuckles and gear blanks are being forged on Ajax High Speed Solid Frame Forging Presses. Ajax Forging Presses afford many production advantages not present in other types of presses, such as solid steel frames without tie rods, greater simplicity of operation, lower maintenance, etc.

The same economies which are effected in press forging tractor parts, apply to an extensive list of parts, in many industries, which can be press forged better, faster and at less cost than by any other known method.

Write for Bulletin 75-B

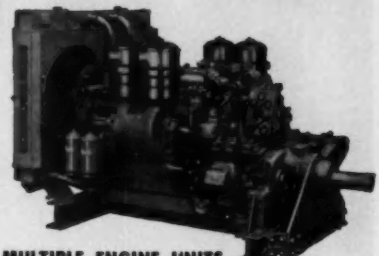
THE Ajax MANUFACTURING COMPANY
EUCLID BRANCH P. O. CLEVELAND 17, OHIO
110 S. DEARBORN ST. CHICAGO 3, ILLINOIS
DEWART BUILDING NEW LONDON, CONN.

GENERAL MOTORS
Series 71 DIESEL ENGINES

GM
GENERAL MOTORS
DIESEL POWER

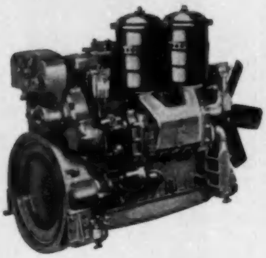
FOR GREATER DIESEL POWER IN A MORE COMPACT ENGINE, SPECIFY "G.M."

Here's the answer to your need for dependable, low-cost Diesel power—the General Motors Series 71 Diesel engine. Operating on the 2-cycle principle—power at every piston downstroke—this space-saving unit gives substantially more power per pound of weight, starts on its own safe fuel and runs smoothly and cheaply. It responds quickly to varying load demands, is easy to maintain. All engines available in either right or left-hand rotation.



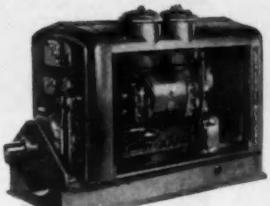
POWER UNIT ENGINES

Power Unit Engines are available in 2, 3, 4 and 6-cylinder models. Right or left side mounting of blower, exhaust manifold and other components. Radiators, power take-offs, flywheel housing adaptors and other accessories may be purchased to adapt it to a variety of installations. Illustrated is Model 6045 C.



BASE MOUNTED POWER UNITS

Short base units are available in 2, 3, 4 and 6-cylinder models, enclosed or "open." Long base units with outboard shaft bearing in 3, 4 and 6-cylinder models. Complete instrument panels carry all necessary gauges in handy location. Structural steel bases; GM heavy-duty power take-off with clutch; quick electric starting. Illustrated is Model 6082 GM Diesel engine equipped with new compact General Motors torque converter.



MULTIPLE ENGINE UNITS

Two basic General Motors Series 71 Diesel engines compactly mounted side-by-side and geared to a single drive-shaft form the "Twin 4" or "Twin 6" Diesel. Each engine has an individual clutch and individual as well as synchronized throttle controls. Thus one or both may be in use or "cut out" as desired, giving extreme flexibility of operation. GM Series 71 Diesels also available in "Quad 6," consisting of four 6-cylinder engines mounted on one base and geared to a single shaft. "Twin 6," Model 12103 HD is illustrated.

Whatever your need for power, a GM Diesel "71" engine will fill it economically and dependably. Choose from single engines up to 130 *continuous duty* B.H.P., "Twins" to 260 or "Quads" up to 520. Write for the name and address of the dealer nearest you.

Engine	No. Cylinders	Bore and Stroke	Cylinder Displacement (Cu. In.)	BHP Industrial Models with Standard Equipment: Continuous at 1600 RPM	Max. at 1800 RPM: 60 MM. Injectors	Max. at 1800 RPM: 70 MM. Injectors	Weight, Lbs. (Industrial Engines)
2-71	2	4¼" x 5"	142	43	49	58	1430*
3-71	3	4¼" x 5"	213	65	76	89	2000*
4-71	4	4¼" x 5"	284	87	103	120	2300*
6-71	6	4¼" x 5"	426	130	153	178	2800*
Twin 4	8	4¼" x 5"	568	170	203	236	5100‡
Twin 6	12	4¼" x 5"	851	260	300	349	5400‡
Quad 6	24	4¼" x 5"	1702	520	600	698	12065‡

*Weights shown are approximate for short base enclosed power units complete with all accessories.
‡Weight for complete unit including all accessories.

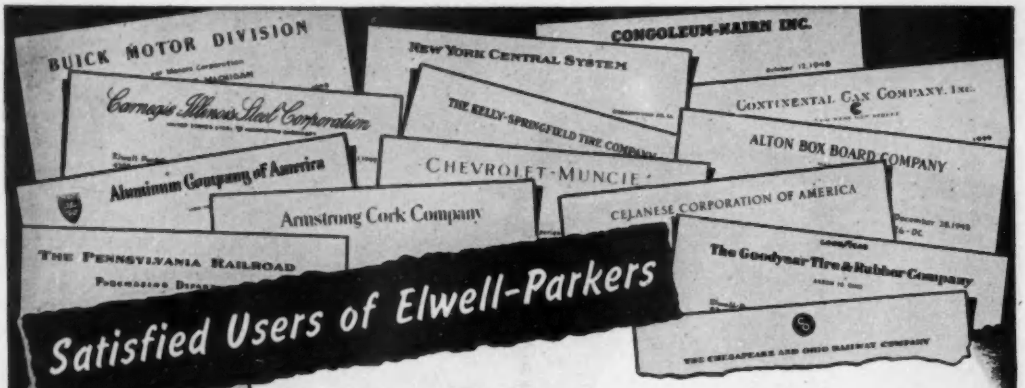
TORQUE CONVERTER UNITS NOW AVAILABLE!

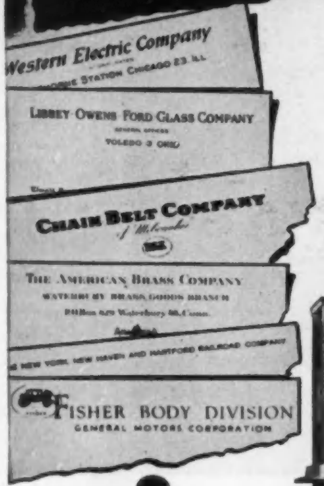
New General Motors Diesel engine-torque converter units are now available in Single 3, 4 and 6-cylinder, "Twin 4" and "Twin 6" models. Here for the first time is a complete engine, torque converter and fluid coupling power unit built by one manufacturer with no divided responsibility. The unit produces torque multiplication of up to 4 to 1 for starting variable heavy loads. It also provides highly efficient transmission of power during light load periods by automatically shifting to fluid coupling. The fluid circuit prevents engine stalling under any load, and at the same time protects both engine and driven machinery from sudden shocks. *As shown in illustration at lower left, GM Diesel engine-torque converter unit takes up no more space than engine with conventional power take-off.*

DETROIT DIESEL ENGINE DIVISION • GENERAL MOTORS CORPORATION • DETROIT 28, MICHIGAN


"STRAIGHT STORY"
WHEATLAND
electric weld steel tubing
Wheatland adheres strictly to the basic policy of production geared to the highest standards. Rigid inspection, exhaustive tests eliminate all possibility of flaws. We offer our users the ultimate in precision —a Wheatland hall-mark through the years.
Prompt delivery can be made on tubing cut to your specifications or in mill lengths. Write now for samples and prices.
MADE BY MEN WHO KNOW PIPE
WHEATLAND
TUBE COMPANY
1300 Bankers Security Building • Philadelphia 7, Pa.

BODY PANEL
BODY PANEL
SEAL
FILLER STRIP
GLASS

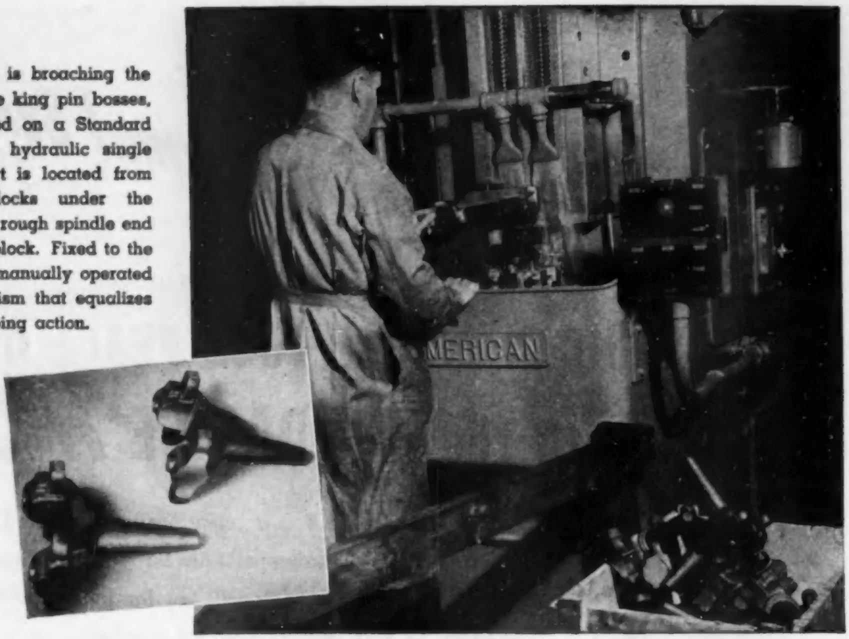




F-26T, Electric

GF-26T, Gas

The first operation is broaching the four surfaces of the king pin bosses, which are broached on a Standard *American* SB-66-25 hydraulic single ram machine. Part is located from fixed locating blocks under the bosses, and on the rough spindle end with floating Vee block. Fixed to the machine ram is a manually operated equalizing mechanism that equalizes part prior to clamping action.



FOUR MAJOR PRODUCTION OPERATIONS

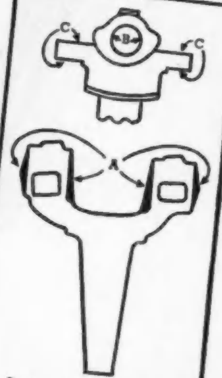
on truck steering knuckle bosses

performed by *American* BROACHING MACHINES

Broaching eight flat surfaces and a king pin hole in truck steering knuckle bosses brought maximum production economy to the midwest plant of a leading truck and farm equipment manufacturer. The four machining operations are listed in broaching sequence below:

1. Inside and outside surfaces of king pin hole bosses surface broached on an *American* SB-66-25.
2. King pin hole broached to size using an *American* VP-3-10-30.
3. Top and bottom surface of bolt bosses broached to size on an *American* SB-48-15.
4. Inside face of bosses finished shaved square with hole on an *American* V-2-6 Ton Press.

This set-up is excellent evidence of the versatility of *American* Broach engineering. Perhaps you have a production step where one or more broaching operations can reduce costs — step up production. Write to *American Broach*, Dept. I, for information and descriptive circular No obligations, of course.



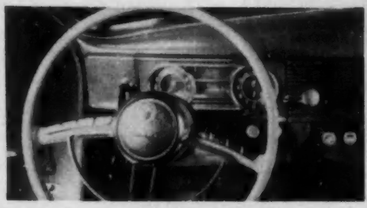
Surfaces A are broached in operation 1, hole B is broached to size in operation 2, bolt bosses C are surface broached in 3 and inner surfaces A are shaved square with the king pin holes in operation 4.

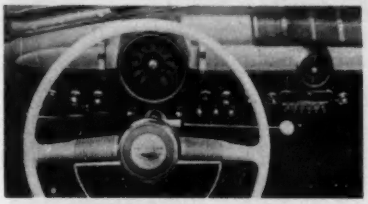
American BROACH & MACHINE CO.

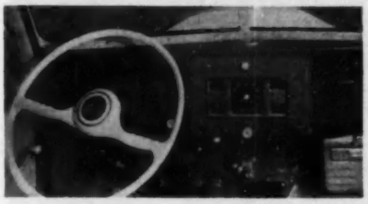
A DIVISION OF SUNDSTRAND MACHINE TOOL CO.

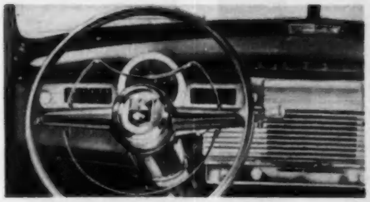
ANN ARBOR, MICHIGAN

American First—for the Best in Broaching Tools, Broaching Machines, Special Machinery









Here's top filtering mileage!

Yours with Purolator Micronic's 10 feet of filtering surface that holds 290% more dirt!

Your customers will find that Purolator *Micronic** Oil Filters give *top* protection from engine-wrecking abrasives . . . *for a much longer period of time than ordinary filters!*

That's because the *smallest* automotive type Micronic element has 570 square inches of filtering surface compared to 54 in ordinary filters . . . *holds much more dirt.*

Even more important, it removes particles measured in *microns* (.000039 of an inch) from the oil. Traps an average of 290% more abrasives than comparable size filters.

This story of Purolator's top performance is carried to your customers from coast to coast via The Saturday Evening Post, Life and other leading national magazines. Reason why you'll get better acceptance for engines and vehicles when you equip them with Purolator. If you have a special filtering problem, be sure to consult us *now.*

	COMPETITOR	IN AVERAGE DIRT RETENTION PUROLATOR LED BY:
HERE'S PROOF THAT PUROLATOR GIVES ENGINES GREATEST PROTECTION!	A	199%
	B	220%
	C	113%
	D	547%
	E	164%
	F	619%
	G	255%
	H	339%
	I	318%
	J	193%
	K	237%
	AVERAGE PUROLATOR SUPERIORITY	290%

PUROLATOR

MICRONIC OIL FILTER

"FIRST IN THE FIELD OF FILTERING"

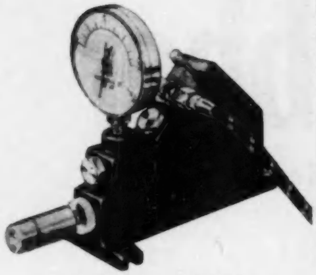
PUROLATOR PRODUCTS INC.

Newark 2, New Jersey; and Toronto, Ontario, Canada

Look to Merz

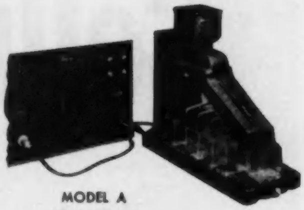
for precision equipment for every inspection need!

EXACTITUDE
STANDARD A.G.D. GAGES

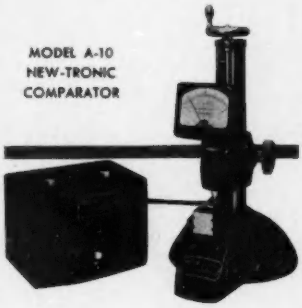


VERSATILE—MODEL 30
NEW-MATIC MEASURING MACHINE

MASTER MODEL
UNIVERSAL CHECKING PLATE



MODEL A
NEW-TRONIC
BALL SORTER



MODEL A-10
NEW-TRONIC
COMPARATOR

MODEL B-10
NEW-TRONIC HEIGHT GAGE

VIGILANT—MODEL 60
NEW-MATIC
MEASURING MACHINE

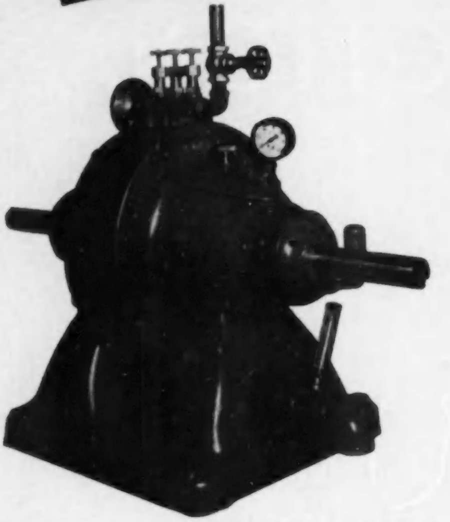
Whatever your inspection requirements, look with complete confidence to Merz precision measuring and checking machines. Every Merz product is a proved cost-cutter, a tested time-saver. The Merz line includes *New-Matic* Measuring Machines, *New-Tronic* Comparators and Gages, Checking Plates, Standard A.G.D. Gages. Merz also specializes in the custom-building of equipment for handling unusual inspection and sorting problems, however complex. Merz inspection equipment has for years been helping to reduce loss, speed production and increase profits for many of the nation's leading industries. Write for complete information on how Merz' "Four Spheres of Service" can do the same for you.

MERZ ENGINEERING COMPANY • INDIANAPOLIS 7, INDIANA

MERZ

The House That Precision Built

HI-EFF TAYLOR HYDRAULIC DYNAMOMETERS



EFFICIENT—ECONOMICAL—COMPACT

Investigate today! Taylor HI-EFF now offers a unidirectional force measurement device, if remote station reading is desired. In addition, remote control can be employed in most applications.

All frictional and torque losses, except of cradle bearings, are measured. Consequently a high degree of accuracy (approx. 99.7%) is maintained. Compared on a H.P. and R.P.M. capacity basis, and considering the low initial cost, minimum maintenance expense and small floor space required, you can have HI-EFF accuracy at cost savings that will surprise you. HI-EFF offers the most economical maintenance and investment cost per hour.

Taylor HI-EFF Hydraulic Dynamometers are available in 72 different capacity models — Capacities range from fractional to 10,000 H.P. Speeds from 0 to 25,000 R.P.M. Reversible if desired.

Taylor engineers will be glad to make recommendations to suit your specific problems. Write for Bulletin No. 760.

TAYLOR DYNAMOMETER AND MACHINE COMPANY

5111 West Center St., Milwaukee 10, Wisconsin

Manufacturers of HI-EFF Hydraulic Dynamometers — Static Balancing Machines — Sensitive Drilling Machines.

MARKING COSTS DROP PLUMB

They plunge straight down to the "lowest cost per mark" . . . when you use a marking machine or tool properly designed by Matthews, leaders in Quality Marking Products Since 1850.

This unit. . . for example, is the Matthews "204". It marks up to 800 round, flat or contoured parts per hour . . . legibly, uniformly and safely.

Write Matthews today for complete information and literature on "Product Marking". Just send details of your product, and where and how you would like to mark it.

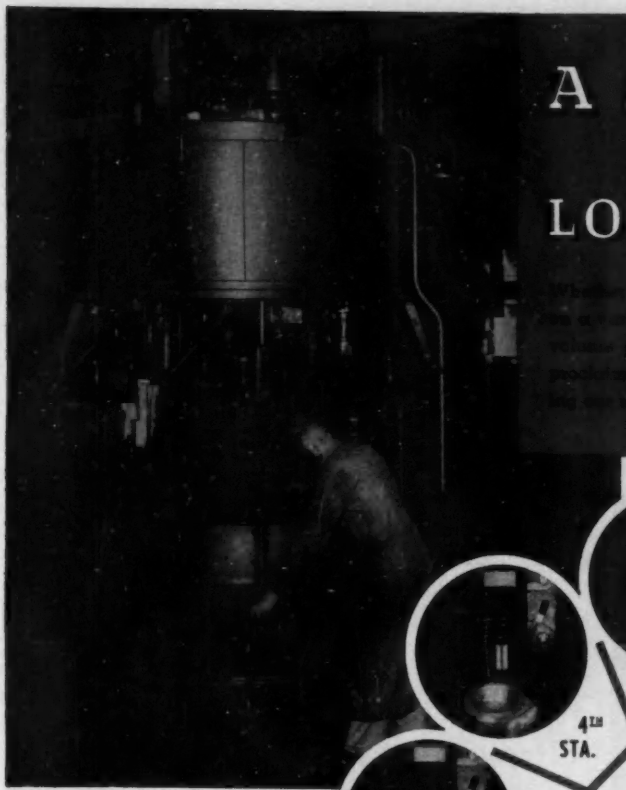
JAS. H. MATTHEWS & CO.

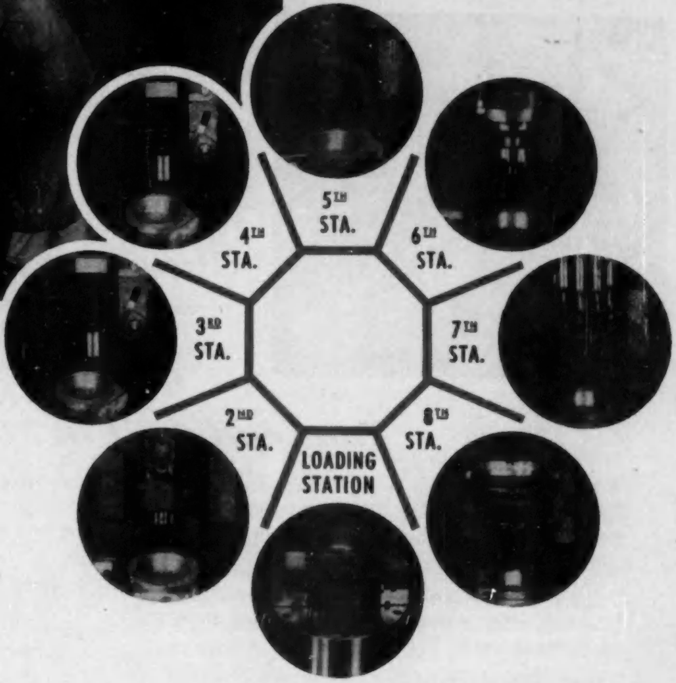
3986 FORBES ST., PITTSBURGH 13, PA.

NEW YORK · BOSTON · PHILADELPHIA · CHICAGO · NEWARK · SYRACUSE · CLEVELAND · CINCINNATI · DALLAS · BIRMINGHAM · LOS ANGELES

A KEY UNIT TO LOWER COSTS

Whether Mult-Au-Matics are tooled for versatility on a variety of the shorter run jobs or tooled for volume production, users have for many years proclaimed these machines "Key units to lowering our manufacturing costs".





1st Station—: Loading

2nd Station—: Rough Bore—Three Diameters

3rd Station—: Rough Face—Three Surfaces

4th Station—: Finish Face—Three Surfaces

5th Station—: Finish Bore—Three Diameters and Chamfer

6th Station—: Precision Bore—Two Diameters

7th Station—: Multiple Drill—Ten Holes

8th Station—: Multiple Tap—Ten Holes

Many of today's economic problems are being solved through lower manufacturing costs. A Mult-Au-Matic installation may be the solution to some of YOUR PROBLEMS.

Let Bullard engineers study your manufacturing methods with a view towards reducing your manufacturing cost via the Mult-Au-Matic Method. Write for Mult-Au-Matic "Pictorial".

THE BULLARD COMPANY

BRIDGEPORT 2, CONNECTICUT

EATON VALVE DEVELOPMENT has Contributed to Higher Efficiency and Longer Life for Engines in Every Type of Service

Since the first automotive valves were introduced by this organization in 1911, it has been Eaton's objective to produce valves which would meet the requirements of constantly increasing engine speeds and extreme operating temperatures. Eaton's development of the sodium cooled valve in 1923 represents one of the most important single advancements in the history of aviation. Applying the sodium cooled principle to automotive use, Eaton is contributing thousands of miles of additional life to valves in heavy duty truck and bus service. Equally important advancements have been made in valves for passenger car use—valves which deliver a hundred thousand miles and more of dependable service.

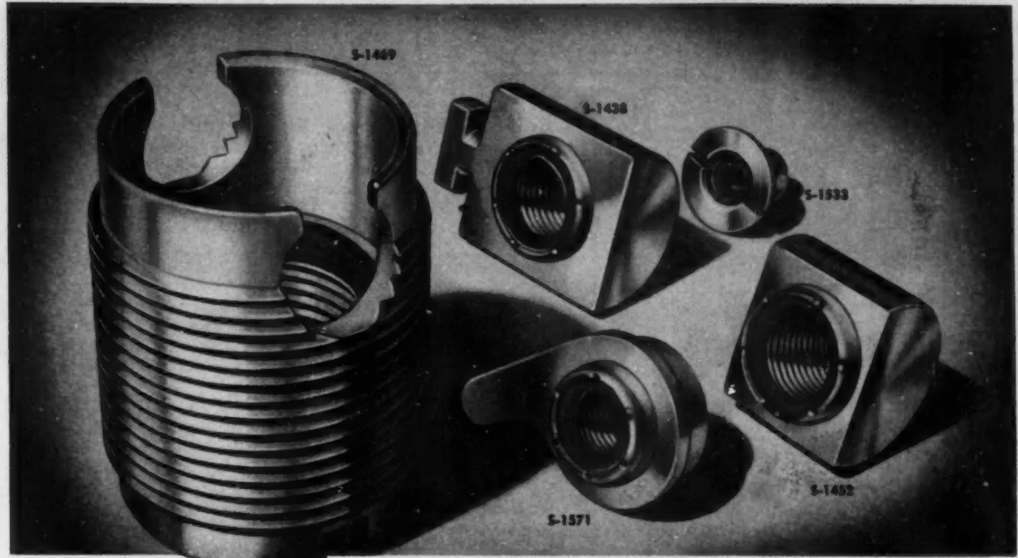
EATON
MANUFACTURING COMPANY
VALVE DIVISION
9771 French Road • Detroit 13, Michigan


THE CONVAIR B-36 with a service-ceiling above 40,000 feet requires materials that withstand temperatures ranging from −100° to +500°F.
that's why SILASTIC*
the Dow Corning Silicone Rubber is used in so many places where rubber-like properties must be retained for long periods of time at temperatures far above and below the limits of any organic rubber.
SILASTIC gaskets reinforced with glass cloth used as a seal in cabin heating and pressurizing system. Operating temperatures in the range of −70° to 400°F.
SILASTIC seals for bomb bay doors and for cover plates, doors and windows in camera bays, retain their strength, resilience and flexibility at temperatures ranging from −100° to +160°F.
SILASTIC gaskets reinforced with glass cloth used to seal rocker arm housing in Pratt and Whitney Wasp Major engines. Withstand hot oil at operating temperatures in the range of 450°F.
SILASTIC boots used to increase the reliability and to prevent corrosion and untimely shorting of limit control switch made by Exhibit Supply Company. Retain their strength and flexibility over entire operating span of −100° to +170°F.
For more data on Silastic phone our nearest branch office or write for New Silastic Facts, data sheet B-14.
*T.M. Reg. U.S. Pat. Off.
DC 4 COMPOUND the non-melting silicone dielectric used to exclude moisture from aircraft ignition systems, electrical control systems and electronic equipment. Properties and application methods described in data sheet B-14-A.
DOW CORNING CORPORATION, MIDLAND, MICHIGAN
ATLANTA • CHICAGO • CLEVELAND • DALLAS • LOS ANGELES • NEW YORK
Canada: Fiberglas Canada, Ltd., Toronto • Great Britain: Albright and Wilson, Ltd., London
Dow Corning
FIRST IN SILICONES

Fastener Problems complicated by space limitations

OVERCOME WITH

ESNA SELF-LOCKING FITTINGS



—famous Red Elastic Collar... the ONLY *self-locking nut principle readily adapted to specially designed aircraft fittings!*

To help aeronautical engineers overcome fastener problems complicated by space limitations, ESNA custom builds "engineered fittings" that short cut standard types of bolted assemblies by providing a single-unit *weight-saving* design!

The Elastic Stop Nuts shown above have been scientifically engineered to meet special requirements . . . S-1452 for wing outer panel to wing center section; S-1469 External-Internal threaded nut and S-1438 Trunion nut for engine mounts; S-1533 flush mounting nut for canopies and for floor and bulkhead honeycomb construction; S-1571 self-anchoring nut (single lug turns until held by structure).

But these are just five of the hundreds of special Elastic Stop Nuts designed by ESNA Engineers in cooperation with our aircraft customers . . . typical of the fastener engineering services always available to ESNA customers. And all of these special fasteners illustrate how readily the Red Elastic Collar self-locking principle adds positive protection against vibration to varied design forms.

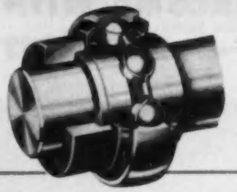
HERE'S A CHALLENGE: If you have a weight problem where a special self-locking fitting might provide a solution, send us the details. Our Service Engineering Group is prepared to study these questions and will gladly submit their recommendations—and drawings and test samples at your request—FREE. Write Elastic Stop Nut Corporation of America, Union, N. J. Representatives and Agents are located in many principal cities.

ESNA

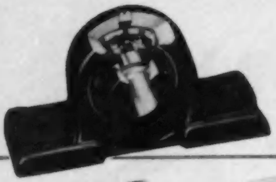
ELASTIC STOP NUTS

OVER 450 TYPES AND SIZES IMMEDIATELY AVAILABLE FROM STOCK

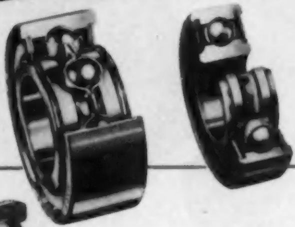
Down to earth performance in American agricultural equipment



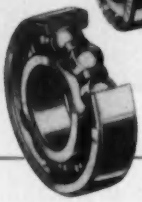
Wide Inner Ring Ball Bearing with Self-Locking Collar . . . easiest of all bearings to install and remove. Just a twist of the wrist to lock on the shaft or to unlock. No shaft shouldering, lock nuts or adapters.



Ball Bearing Pillow Blocks and Cartridges . . . in both light and heavy duty series. Available with labyrinth type Fafnir Mechani-Seals and with combination labyrinth and felt seals. Grease lubricated. Self-aligning. Can be mounted in any position.



Plya-Seal Ball Bearings . . . Unique contact seal provides the most perfect grease retention and contaminent exclusion. Seals easily removed for inspection or relubrication . . . and as easily replaced. Furnished in standard widths or wide type.



Radial Ball Bearings. . . All sizes, extra light, light and medium series. Also internal and external self-aligning types. Many variations to meet special conditions.

All types of shielded and sealed ball bearings . . . grease shield, Mechani-Seal, felt seal and combinations of these.

An attitude and an aptitude . . .

Important to you is Fafnir's attitude and aptitude — a way of looking at ball bearings from your point of view and an aptitude for coming up with the right answer, gained from working with not just one or two industries but with all industries. The Fafnir Bearing Company, New Britain, Conn.

Experienced sales engineering service from nearby branch offices.

FAFNIR
BALL BEARINGS
MOST COMPLETE LINE IN AMERICA

Cross-sectional view of John Bean Royal pump showing TOCCO-hardened areas on crankshaft, ring gear and pinion.

with TOCCO* Induction Heating

Progressive engineers at John Bean Manufacturing Company recently adopted TOCCO Induction Heating for hardening vital parts on famous Royal high pressure pumps. The annual savings of $7669 is typical of the experience of thousands of metal-working plants who have adopted economical TOCCO for hardening, brazing, soldering, and heating for forging.

TOCCO IS ECONOMICAL—Cost of heat-treating parts shown was cut from $3.51 to 95¢ when TOCCO replaced conventional heat-treating methods.

TOCCO IS DEPENDABLE—Rejects due to variation in heat-treating are eliminated because TOCCO is automatic—produces identical results—one part or a million.

TOCCO IS FAST—Hourly production rates of the crankshaft are 40 per hour, of the ring gear 25 per hour, and the pinion 20 per hour.

TOCCO IS VERSATILE—One unit, a 125 K.W., 10,000 cycle TOCCO machine hardens all these parts, and also shrink-fits gear to eccentric shafts.

Our Engineers can probably find applications in your plant, too, where TOCCO can increase output and cut unit costs. Having such a survey made costs you nothing—and may save you a great deal.

THE OHIO CRANKSHAFT COMPANY

TOCCO

JUST PUSH A BUTTON

*Trade Mark Reg. U.S. Pat. Off.

Mail Coupon Today

NEW **FREE** BULLETIN

THE OHIO CRANKSHAFT CO.
Dept. H-3, Cleveland 1, Ohio

Please send copy of "Typical Results of TOCCO Induction Hardening and Heat Treating".

Name ____________________

Position ____________________

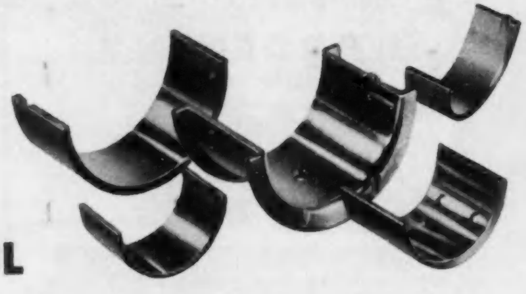
Company ____________________

Address ____________________

City __________ Zone ____ State ______

✓ LONGER BEARING LIFE

✓ HIGHER PERFORMANCE STANDARDS



FEDERAL-MOGUL *Sintered* COPPER ALLOYS

Investigate the advantages of superior bearing performance available through our exclusive method of sintering copper lead alloys.

In this process each tiny particle of powder is a true alloy of the desired proportions of copper and lead. In the finished bearing this process has created a known and controlled grain structure, of exceptional purity, with excellent lead distribution and with no segregation. Its ductility and strength are superior to cast materials of comparable analyses.

A request on your letterhead will bring a copy of our illustrated technical bulletin describing the development of this improved alloy made possible through powder metallurgy. We believe you will find it a worthwhile addition to your reference file.

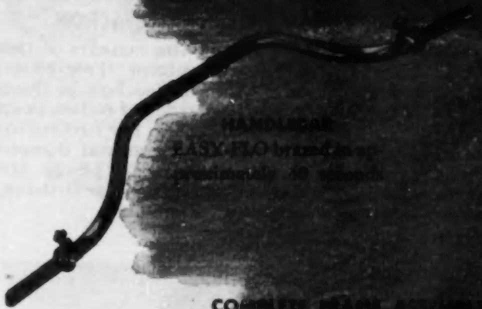
FEDERAL-MOGUL CORPORATION, 11037 Shoemaker, DETROIT 13, MICH.

FEDERAL Mogul
Silent SLEEVE BEARINGS

Over 50 Years of Continuous Bearing Experience

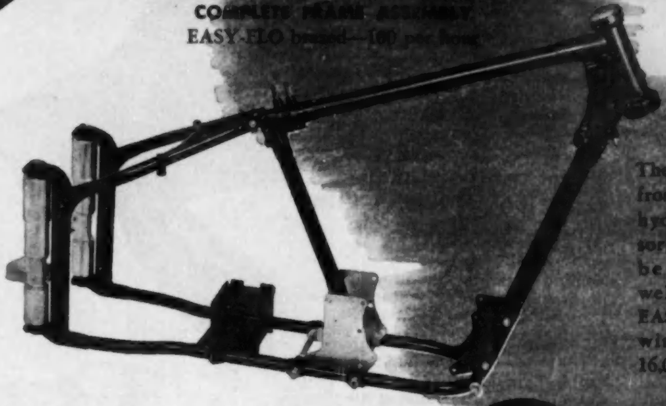
EASY-FLO adds cost-cutting strength to the new Indian lightweight frame

Indian Motorcycle Co. is one of many manufacturers who have found—(1) that EASY-FLO brazed construction satisfies all strength requirements—(2) that EASY-FLO brazing is naturally fast and economical—(3) that production can be stepped up to any required volume by using a fast heating method and a set-up that includes preplacing the alloy—(4) that far less finishing is required. Parts pictured are from the 1950 lightweight model. Tubing is AISI 4130 chrome-molybdenum steel. All tubular joints are induction brazed with rings of EASY-FLO wire preplaced.

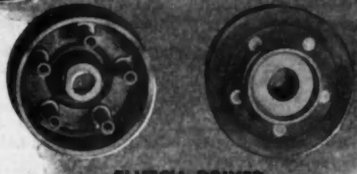


HANDLEBAR
EASY-FLO brazed in approximately 40 seconds

COMPLETE FRAME ASSEMBLY
EASY-FLO brazed—100 per hour



FORK TUBES
These tubes form the front fork and act as hydraulic shock absorbers. Joints must be leak-tight as well as strong. The EASY-FLO joint has withstood a load of 16,000 pounds.



CLUTCH DRIVER
Studs are EASY-FLO brazed, 30 drivers per hour, 5 studs each. Front and back views show complete EASY-FLO penetration.

WHAT WILL *EASY-FLO* BRAZING DO FOR YOU? If you join metals—ferrous or non-ferrous—it is fairly certain that EASY-FLO low temperature silver alloy brazing will speed up production and cut costs on part or all of this work. To find out where and how, write or call and ask us to send a service engineer. He'll demonstrate EASY-FLO brazing and discuss its application to your work. There's no obligation to you for this service.

BULLETINS 12-A, 15 AND 17 will give you EASY-FLO facts in print. Write for copies today.

HANDY & HARMAN

82 FULTON STREET **NEW YORK 7, N. Y.**

Bridgeport, Conn. • Chicago, Ill. • Los Angeles, Cal. • Providence, R. I. • Toronto, Canada

Agents in Principal Cities

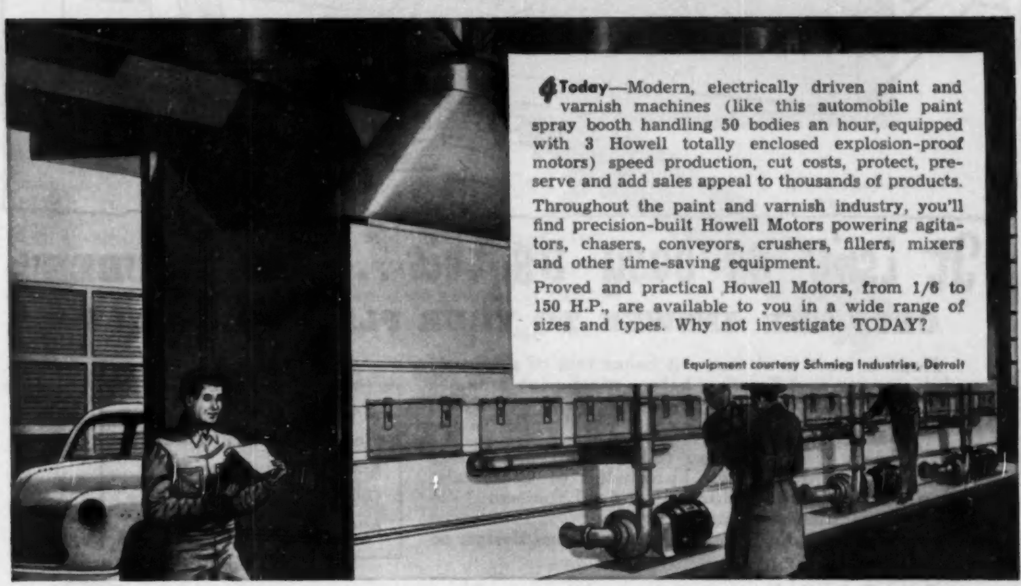
1 1875—For centuries, hard labor and a paintbrush were man's main means of adding beauty and color. But, with the industrial revolution at hand, new devices were sorely needed to break this bottleneck.

2 1900—The artist's airbrush was born. On its heels came the paint spray gun. Both products, strangely enough, stemmed from the atomizer used by doctors to prevent colds. Painting swung into high gear.

3 1915—Portable paint-spraying equipment was introduced in this, the year Howell "Red Band" Electric Motors arrived. Soon these rugged motors made important contributions to this and other industries.

PAINT . . . protects, preserves, decorates and sells!

(AND HOWELL MOTORS HELP SPEED MODERN PAINTING PROCESSES—CUT COSTS)



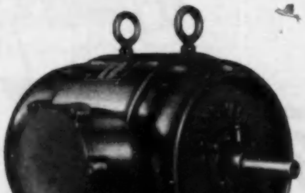
4 Today—Modern, electrically driven paint and varnish machines (like this automobile paint spray booth handling 50 bodies an hour, equipped with 3 Howell totally enclosed explosion-proof motors) speed production, cut costs, protect, preserve and add sales appeal to thousands of products.

Throughout the paint and varnish industry, you'll find precision-built Howell Motors powering agitators, chasers, conveyors, crushers, fillers, mixers and other time-saving equipment.

Proved and practical Howell Motors, from 1/6 to 150 H.P., are available to you in a wide range of sizes and types. Why not investigate TODAY?

Equipment courtesy Schmieg Industries, Detroit

Free enterprise encourages mass production, supplies more jobs—provides more goods for more people at less cost.



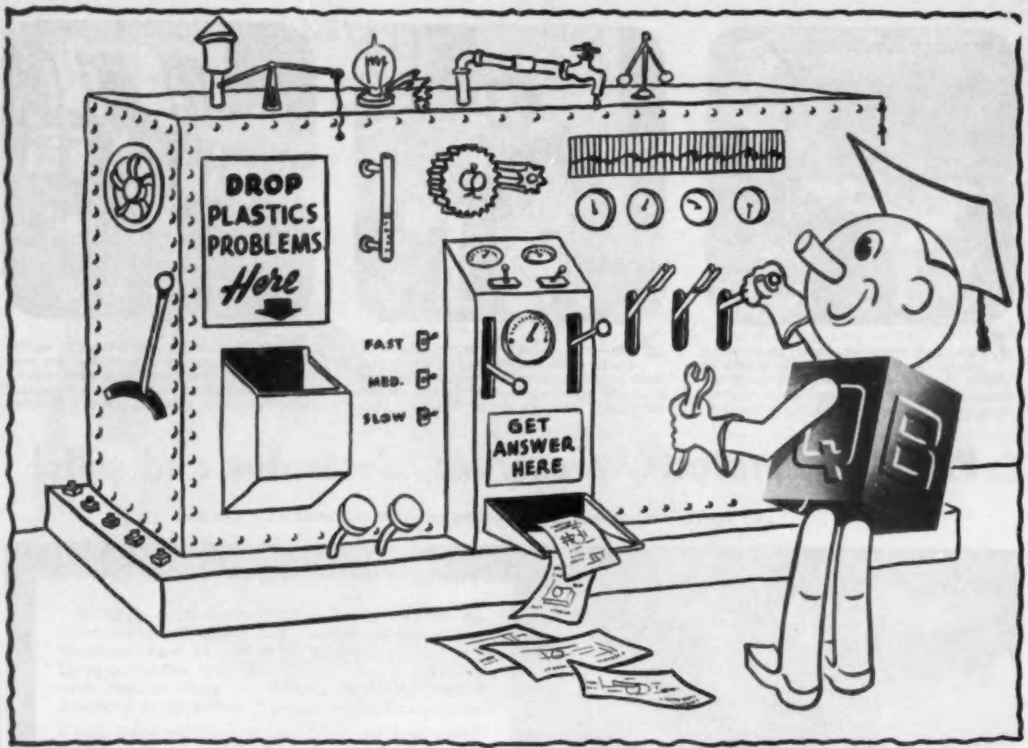
Howell totally-enclosed, explosion-proof motors for use where inflammable liquids or gases are handled or stored.

HOWELL MOTORS

HOWELL ELECTRIC MOTORS CO., HOWELL, MICH.

Precision-built Industrial Motors Since 1915

HOWELL Red Band MOTORS



It isn't as easy as this ... BUT "CUBEE" GETS THE ANSWER TO YOUR PLASTICS PROBLEMS!

Nope it isn't that easy—it takes lots of planning and designing and figuring before most problems are solved. But we've enjoyed great success at satisfying our clients just the same.

We know that, in order to help you, with your problems, we must have knowledge of materials, design, die-making, production and all the rest. We have those facilities—all under one roof—you see we're specialists in molding plastics parts—from design to finished product.

Call "Cubee" the next time you have a problem in design. We think we can help you.

QUINN-BERRY CORP.
2643 West 12th Street
ERIE, PENNSYLVANIA

Q-B Says:

"When you're planning in Plastics
And you want the very best
Give your problems to "Cubee"
And we'll do the rest".

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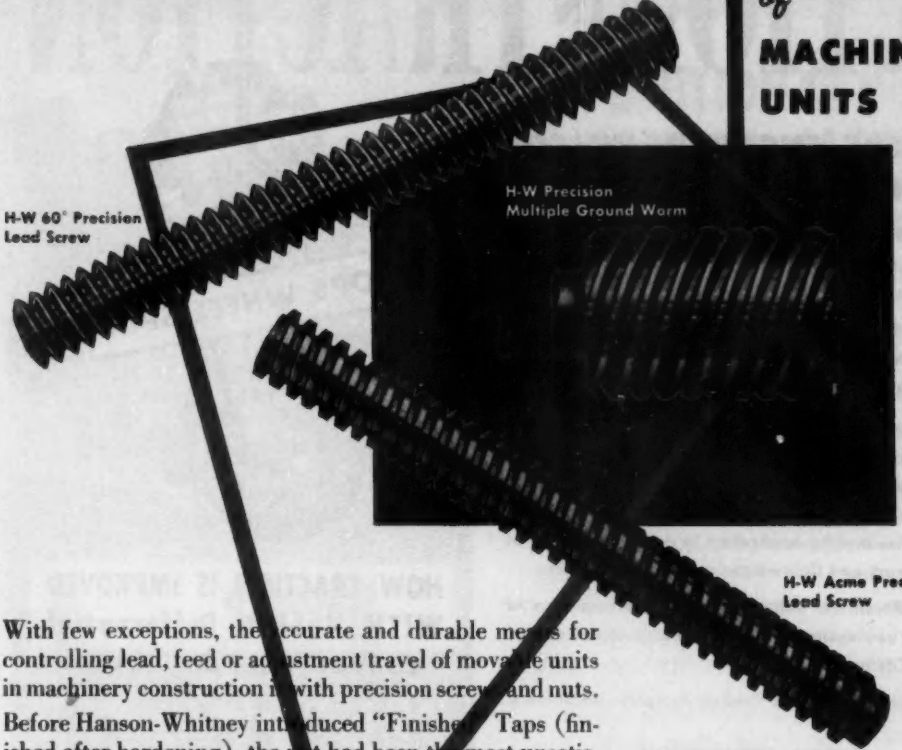
For **ACCURATE TRAVEL CONTROL**

of

MACHINE UNITS



With few exceptions, the accurate and durable means for controlling lead, feed or adjustment travel of movable units in machinery construction is with precision screws and nuts.

Before Hanson-Whitney introduced "Finished" Taps (finished after hardening), the nut had been the most unsatisfactory member due to limitations of thread length because of defective taps. Now, with "Finished" Taps, accurate nuts are produced with sufficient thread length to meet any requirements.

Hanson-Whitney equipment has long produced hardened, precision screws and finished taps for properly proportioned nuts, with threads up to 8 inches in diameter and 24 inches thread length (or longer). We offer you this precision combination to meet your specifications, confident that no finer quality can be obtained. Estimates furnished on request.

HANSON-WHITNEY MACHINE CO., HARTFORD 2, CONN. • Division of Whitney-Hanson Industries, Inc.

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PIONEERS OF FINISHED TAPS

Valuable engineering, illustrated Catalog on request. Please use your business stationery.

2HW50

THE DEVICE THAT PUTS

ACTION IN TRACTION

DESIGNERS · ENGINEERS WELCOME NoSPIN Differential!

NoSPIN Differentials STOP wheel spin . . . while vehicles operate on roads, streets, in sand, mud, snow or on ice, saving tires, chains, gas, oil, insurance and manpower.

NoSPIN Differentials—fully automatic—proved in the driving axles of commercial vehicles through years of peacetime and war service throughout the world.

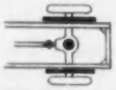
NOW—a new and silent type automatic-locking differential is available. Its exclusive two direction overrunning feature with instant positive drive when required, makes it ideally suited to transfer cases of multi-axle drive vehicles and for application to the driving axles of passenger cars and lightweight commercial vehicles.

NoSPIN Differentials will enhance the performance of the chassis you design. All modern automotive vehicles need ACTION in TRACTION.

Let our traction engineers furnish complete particulars.

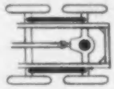
TYPICAL APPLICATIONS

1



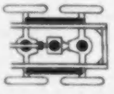
Conventional chassis — inter wheel.

2



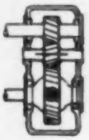
LOAD-BOOSTER third axle.

3



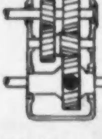
Transfer case and driving axles—full traction.

4



Two direction overrunning clutch — one outlet — forward drive.

5



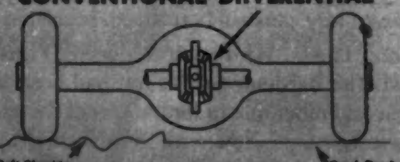
Two direction overrunning clutch—two outlets—four-wheel drive.

6

Through drive to Tube and Quill power outlets.

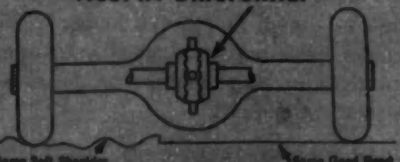
HOW TRACTION IS IMPROVED WITH NoSPIN Differential

CONVENTIONAL DIFFERENTIAL



The conventional bevel gear differential can transfer to the wheel with good footing only as many units of traction as are available to the wheel with the poorer footing.

NoSPIN Differential

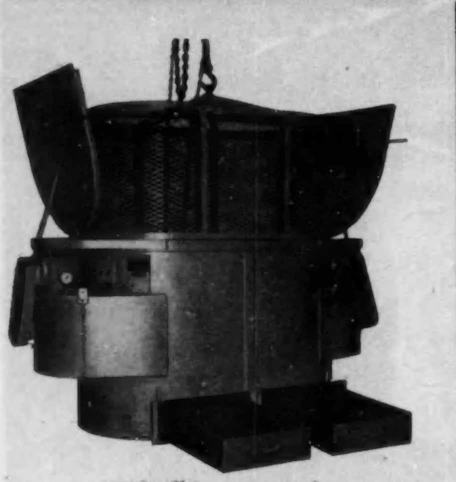


The FULL LOCKING FEATURES of the NoSPIN Differential makes possible—for the first time—the combining of the total units of traction available to each wheel to propel the vehicle.

DETROIT AUTOMOTIVE PRODUCTS CORPORATION

8701 GRINNELL AVENUE • • • DETROIT 13, MICHIGAN, U. S. A.

J.P. Patented CLEANERS



MODEL 600-S 600 GAL. CAP.
AVAILABLE IN 3 SIZES

MODEL 250-G
250 GAL. CAP.
AVAILABLE IN 5 SIZES

REVOLUTIONARY NEW CLEANING METHOD

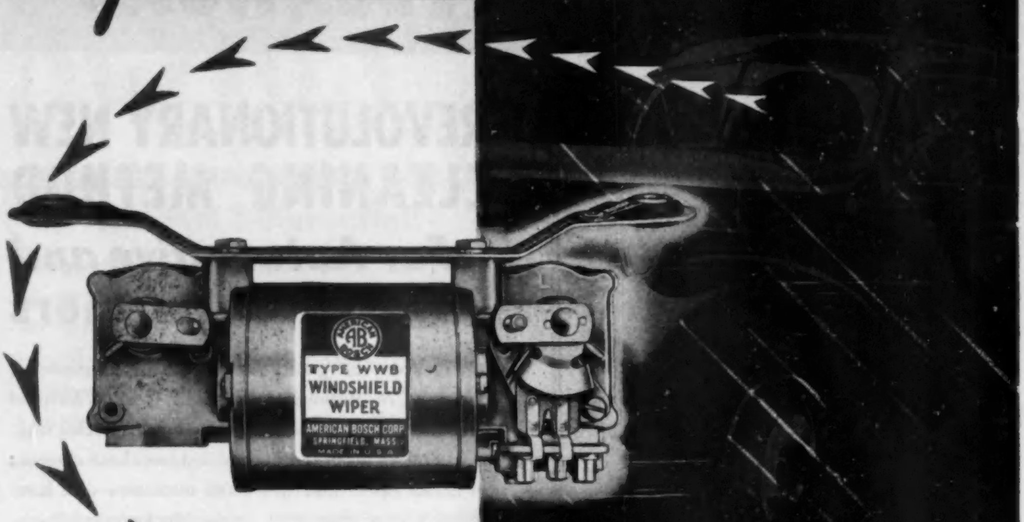
...For Automotive and Industrial Cleaners

● It gives us great satisfaction in announcing the new, revolutionary, patented J. P. Whirlpool Cleaner for Automotive and Industrial cleaning. It has taken years to develop and test these cleaners in actual operation. We have operators who have cleaned more than 4000 motor blocks, crankshafts, and many other types of parts. The J. P. Cleaner is the only cleaner in the world which has these patented features. Before you purchase a cleaner it would be worth your time to see the J. P. Whirlpool Cleaner in operation. Be convinced it is the most simple and practical cleaner in the field.

● *Available in many sizes and models. Write today for further information.*

J.P. MANUFACTURING CO.
YOUNGSTOWN, OHIO, U. S. A.

IF *you* WERE IN THE DRIVER'S SEAT...



YOU'D BUY THE SAFETY OF AMERICAN BOSCH DUAL ELECTRIC WIPERS

- **Direct, electric drive with constant action regardless of engine load or speed.**
- **Synchronized operation of Dual arms and blades.**
- **Two speed operation. Tandem or opposed wiping motion.**
- **Fully automatic blade parking adjustable to suit installation.**
- **Bad weather power — 30 inch/lbs. torque per blade.**
- **Thermal cutout protects wiper motor against overload.**
- **Arms up to 12" long. Blades up to 14". Wiping angle up to 118°.**
- **For 6, 12 or 24 volt systems.**

No stalling, no stuttering of the wiper blades to cloud safe vision of the road ahead. Independent of engine vacuum and regardless of speed or load, this powerful, *direct* electric drive Dual Wiper *always* operates at constant, synchronized speed. Designed for easy installation under cowl or at header. Rugged, heavy duty construction assures years of trouble-free operation. Already in wide use by leading truck manufacturers as original equipment, this new Dual Electric Wiper offers a keen sales-active feature for your line. Ask for complete specifications on Model WWB.

Also available—the famous WWA Single Electric Wiper for Truck, Bus and Marine Service.

American Bosch

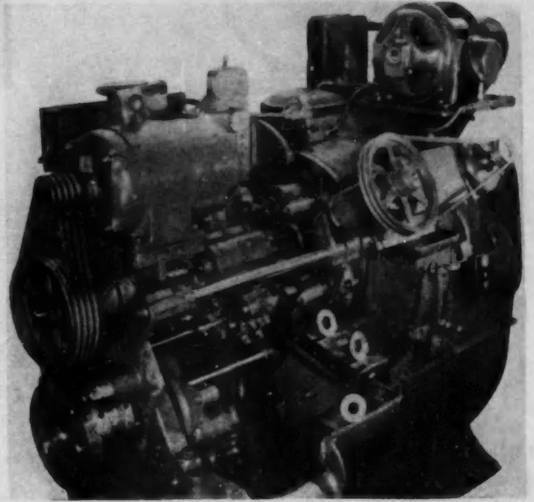
MAGNETOS • GENERATORS • VOLTAGE REGULATORS • IGNITION COILS
ELECTRIC WINDSHIELD WIPERS • DIESEL FUEL INJECTION EQUIPMENT

AMERICAN BOSCH CORPORATION • SPRINGFIELD 7 • MASS.

BAIRD

No. 76 H CHUCKER

Has VERSATILITY



You can combine turning, drilling, tapping, threading, milling, etc., operations.

TRY "Baird" for high production of Automotive Parts requiring finely finished surfaces and close limits.

For Instance:

The picture shows a tool set-up to turn the O.D. and top of a small piston and then cross drill the wristpin hole in the piston in a located position, in one handling and the same machine tooled to turn and then drill the six holes in the cylinder cover plate shown in the picture.

Some of the EXCLUSIVE FEATURES which have made the Baird 7 Six-Spindle Horizontal Indexing Lathe outstanding are:

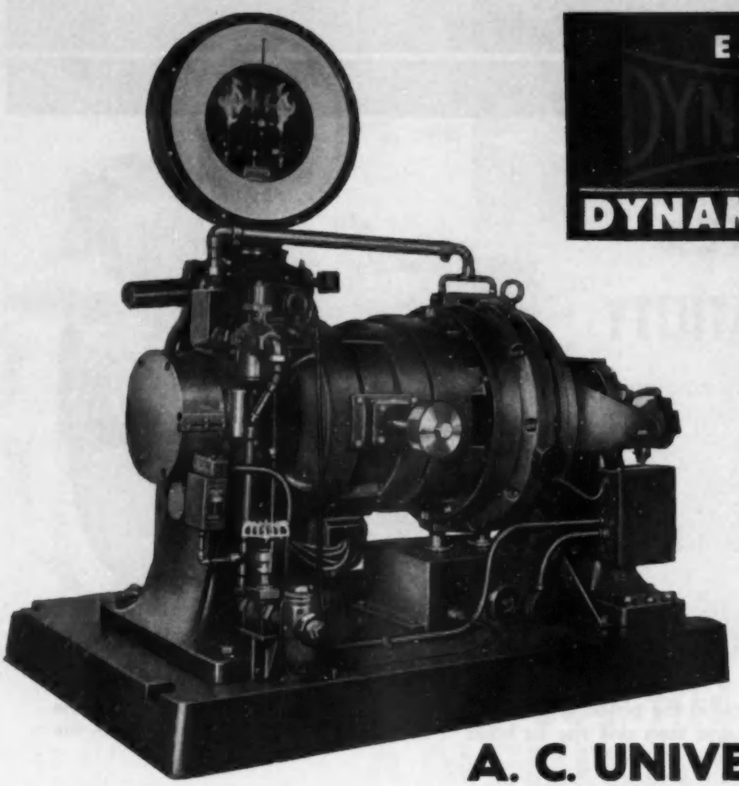
- INDEPENDENT TOOL SLIDES
  The longitudinal tool slides may have different strokes and the cross slides are independent and have their strokes, all as best suits the job. All tool slides have micrometer adjustment.
- DIFFERENT SPEEDS AT SPINDLES
  Ability to choose a speed for the spindle at each work station to suit the operation to be performed at that station permits the best product in least time.
- AUTOMATIC CHUCKING
  Operator has both hands free to handle the work. No levers or handles to require his attention or take his time.
- ATTACHMENTS
  Several readily applied attachments are available to perform extra operations and reduce handling, thus speeding production.
- AUTOMATIC MECHANICAL STOP
  Stops machine at end of each cycle if operator has not unloaded and reloaded in the proper operation of machine. This and other safety features make for least loss due to damage, and for greatest safety.

"ASK BAIRD ABOUT IT"

OTHER BAIRD MACHINES: MULTIPLE SPINDLE GRINDERS, WIRE FORMING MACHINES, PRESSES, TUMBLING EQUIPMENT

THE BAIRD MACHINE COMPANY
STRATFORD, CONN.

EATON
DYNAMATIC
DYNAMOMETERS



A. C. UNIVERSAL
MOTORING AND ABSORPTION TYPES

Dynamatic Dynamometers are extremely simple, compact, and moderate in cost. Universal types provide for instantaneous switching from absorbing to motoring and back, so that friction horsepower of an engine can be determined at attained operating temperatures.

Other outstanding uses include power and efficiency checks of pumps, fans, gears and any power transmitting or absorbing device.

There are almost unlimited possibilities in horsepower and speed combinations; horsepowers from 5 to 5000, speeds from 100 rpm to 30,000 rpm.

Dynamatic Dynamometers provide for instantaneous, accurate indication of torque at all speeds throughout a wide range. Convenient, positive control is accomplished with simple, inexpensive, electronic equipment. These units are extremely flexible in operation, and are adaptable to a wide range of conditions, producing very high torques at low speeds, operating easily at high speeds. An important feature is completely self-contained A.C. operation.

Outline your testing problem for our analysis and recommendations.

ADDRESS INQUIRIES TO: DYNAMATIC CORPORATION • KENOSHA, WISCONSIN • SUBSIDIARY OF

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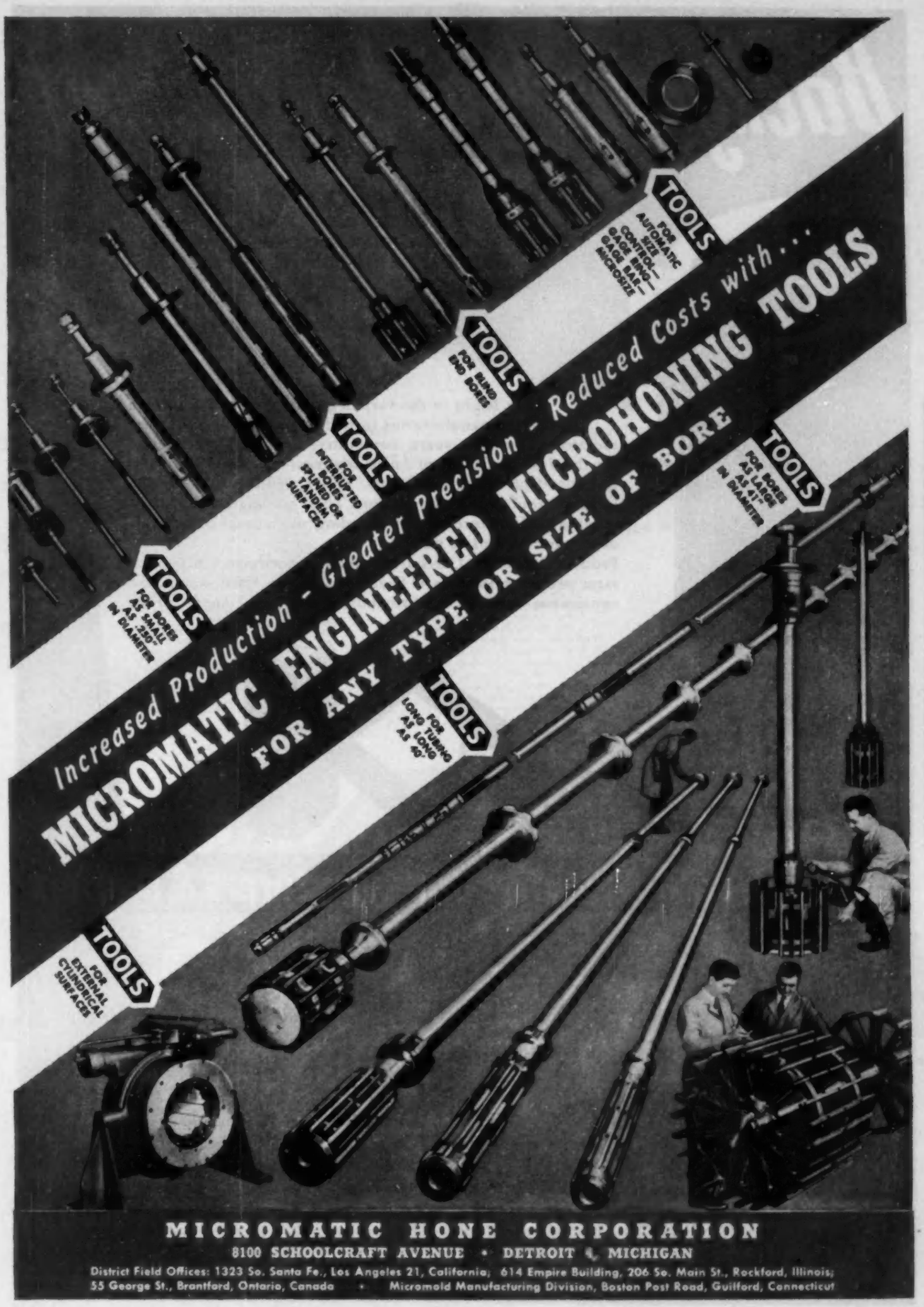
PRODUCTS: SODIUM COOLED, POPPET, AND FREE VALVES • TAPPETS • HYDRAULIC VALVE LIFTERS • VALVE SEAT INSERTS • ROTOR PUMPS • MOTOR TRUCK AXLES • PERMANENT MOLD GRAY IRON CASTINGS • HEATER-DEFROSTER UNITS • SNAP RINGS • SPRINGTITES SPRING WASHERS • COLD DRAWN STEEL • STAMPINGS • LEAF AND COIL SPRINGS • DYNAMATIC DRIVES, BRAKES, DYNAMOMETERS


Increased Production - Greater Precision - Reduced Costs with . . .
MICROMATIC ENGINEERED MICROHONING TOOLS
FOR ANY TYPE OR SIZE OF BORE
TOOLS FOR BORES AS SMALL AS .250" IN DIAMETER
TOOLS FOR BLIND END BORES
TOOLS FOR AUTOMATIC SIZE CONTROL— GAGE RING— GAGE BAR— MICROSIZE
TOOLS FOR BORES AS LARGE AS 41" IN DIAMETER
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TOOLS FOR EXTERNAL CYLINDRICAL SURFACES
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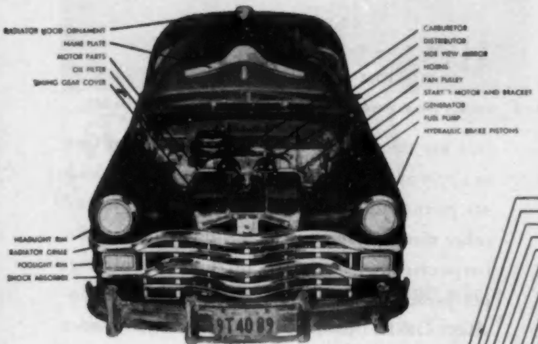
55 George St., Brantford, Ontario, Canada • Micromold Manufacturing Division, Boston Post Road, Guilford, Connecticut

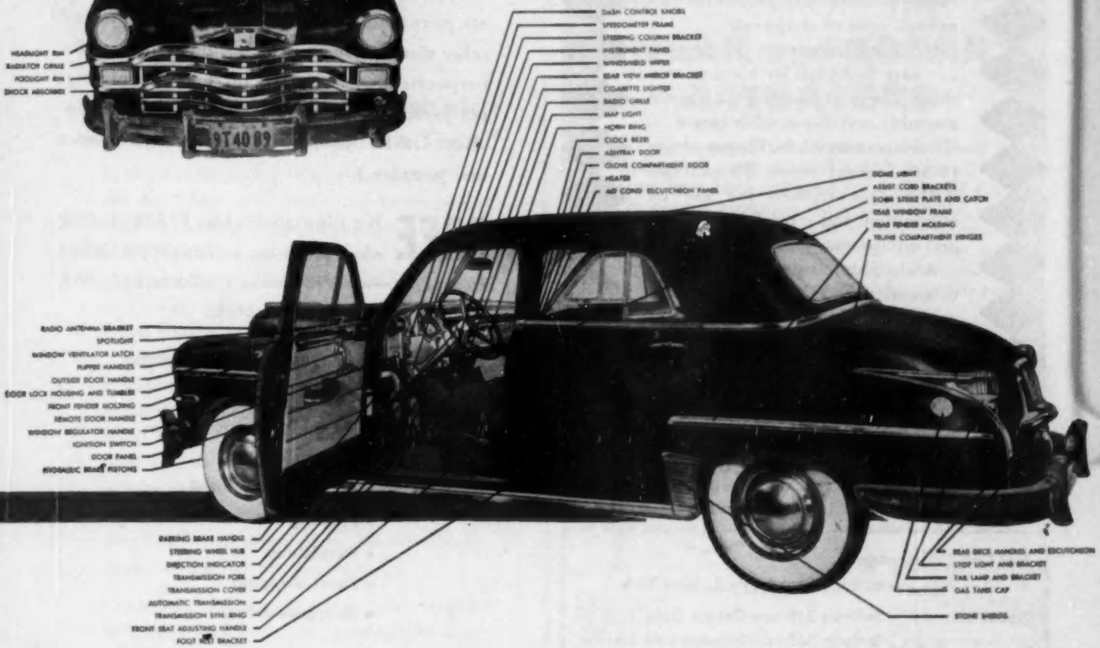
65 DIE CAST APPLICATIONS

. . . and more to come

There are at least 65 die cast applications in current automobile models. Many of these are the results of pioneering by Doehler-Jarvis Research, and many more are in the making.

Our Research Department will be glad to assist you in your development work.





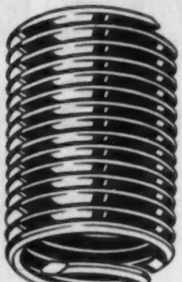
DOEHLER-JARVIS CORPORATION

The World's Largest Producer and Finisher of Die Castings

PLANTS AT: TOLEDO, OHIO • POTTSTOWN, PA. • BATAVIA, N. Y. • GRAND RAPIDS, MICH. • CHICAGO, ILL.

EXECUTIVE OFFICES: 386 FOURTH AVENUE, NEW YORK 16, N. Y.

YOU CAN PREVENT SCREW THREAD TROUBLES WITH *HELI-COIL* INSERTS



LOOSE, frozen, or failing threads can be easily and economically eliminated with Heli-Coil Inserts of precision-formed stainless steel or phosphor bronze wire. They prevent abrasion, corrosion and seizure ... they permanently protect threads against wear or stripping.

Heli-Coil Inserts are inexpensive . . . easy to install by hand or machine. They cut labor costs . . . make assembly and disassembly easier . . . eliminate complaints. They conform to all Federal Screw Thread and A.M.S. specifications for use on automotive and aircraft accessories and equipment.

Add a plus to your product, effect economies in salvage and service with Heli-Coil Inserts. Recommended for all threads in metals, plastics and wood.

Write today for prices and complete data.

HELI-COIL CORPORATION

47-23 35th ST., LONG ISLAND CITY 1, N. Y.

Heli-Coil Corporation
47-23 — 35th Street, Long Island City 1, New York

Please send me ☐ Bulletin 248—on Design Data.
☐ Bulletin 348—on Salvage and Service.

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CITY.......... ZONE.......... STATE..........

"The big parts are ready. We cleaned 'em with the OAKITE Steam Gun"

HERE'S an easy, low-cost way to clean metal parts that are too large to be soaked in tanks or conveyed through washing machines.

Just use the Oakite Solution-Lifting Steam Gun to apply an Oakite cleaning solution under about 40 pounds of steam pressure. Oil, grease and other dirts vanish quickly, leaving parts ready for inspection, assembly, further machining, pre-paint treatment, etc. (The same gun applies Oakite paint-stripping solutions under low pressure.)

FREE For illustrated folder F7338—telling more about the money-saving Oakite Steam Gun—write to Oakite Products, Inc., 28A Thames St., New York 6, N. Y.

ALSO *ask about Oakite procedures for:*

- Cleaning in tanks
- Cleaning in machines
- Electrocleaning
- Pre-paint treatment
- Pickling
- Burnishing
- Paint stripping
- Rust prevention

SPECIALIZED INDUSTRIAL CLEANING
OAKITE
MATERIALS • METHODS • SERVICE

Technical Service Representatives in Principal Cities of U. S. & Canada

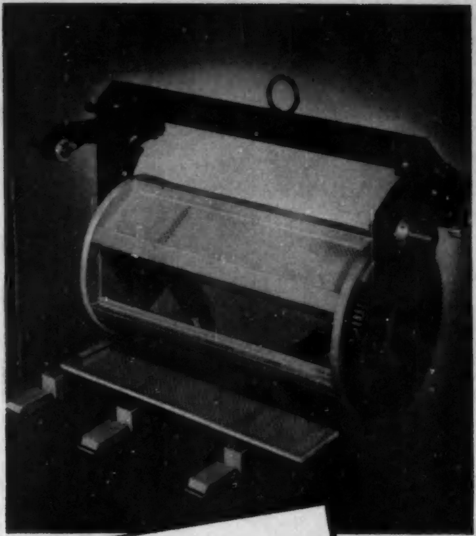


Photo — Courtesy The Udylite Corporation — Detroit

PHENOLITE
Reg. U. S. Pat. Off.
Laminated PLASTIC

The ideal material for plating barrels where high resistance to corrosion is a "must."

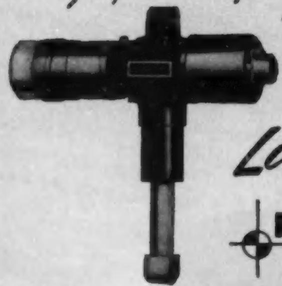
In the electroplating of metals, plating barrels must have high resistance to corrosion from the strong chemical solutions for efficient low-cost operation. In this role, Melamine Fabric Base Phenolite has proved to be very effective because of its exceptional resistance to chemical corrosion.

Phenolite, in addition to these important qualities, is light in weight, with high impact strength, excellent electrical insulating properties and one of the strongest materials per unit weight known. Phenolite has broad use in 'most every industry because of its remarkable combination of properties. Available in a broad group of grades—in Sheets, Rods, Tubes and Special Shapes.

National Service Engineers will, without obligation, assist you in utilizing Phenolite, National Vulcanized Fibre and Peerless Insulation to your best advantage.

NATIONAL VULCANIZED FIBRE CO.
WILMINGTON DELAWARE
Offices in Principal Cities
Since 1873

110 VOLT AC



Lineator® and ROTORAC®

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